

Appointment

From: Cook, Steven [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=394f5dede6184bc083cf9390e49a192c-Cook, Steve]
Sent: 4/4/2018 2:42:46 PM
To: Cook, Steven [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=394f5dede6184bc083cf9390e49a192c-Cook, Steve]; jim.roewer@uswag.org; Fotouhi, David [Fotouhi.David@epa.gov]; Breen, Barry [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=1b44bce1a71e4a95acaf82f2fb858b0-BBREEN]; Leopold, Matt [Leopold.Matt@epa.gov]; Hilosky, Nick [Hilosky.Nick@epa.gov]; Brooks, Becky [Brooks.Becky@epa.gov]; Mattick, Richard [Mattick.Richard@epa.gov]; Johnson, Barnes [Johnson.Barnes@epa.gov]; Devlin, Betsy [Devlin.Betsy@epa.gov]
CC: Roewer, James [JRoewer@eei.org]
Subject: OUTSIDE GUEST CCR Coalition
Location: 1301 Constitution Ave NW Room 3146 epaw
Start: 5/11/2018 5:00:00 PM
End: 5/11/2018 5:45:00 PM
Show Time As: Busy

Security:

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POC: Becky Brooks – 566-2762
Teresa Hill – 566-0200 (scheduler)

Closest Metro Station - Federal Triangle Metro on the Orange/Blue/Silver lines

Our Address:

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Personal Phone / Ex. 6

Appointment

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To: Cook, Steven [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=394f5dede6184bc083cf9390e49a192c-Cook, Steve]; jim.roewer@uswag.org; Johnson, Barnes [Johnson.Barnes@epa.gov]; Hostage, Barbara [Hostage.Barbara@epa.gov]; Devlin, Betsy [Devlin.Betsy@epa.gov]; Brooks, Becky [Brooks.Becky@epa.gov]; Hilosky, Nick [Hilosky.Nick@epa.gov]
CC: Roewer, James [JRoewer@ei.org]; Breen, Barry [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=1b44bce1a71e4a95acaf82f2fbc858b0-BBREEN]; Bridgeford, Tawny [TBridgeford@nma.org]; Kellogg, Dorothy A. [dorothy.kellogg@nreca.coop]; Stephen Fotis [scf@vnf.com]; Stanko, Joseph [jstanko@hunton.com]
Subject: Outside Guest CCR **Conference Lines / Ex. 6**
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Start: 4/12/2018 2:15:00 PM
End: 4/12/2018 3:00:00 PM
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Location: 3415 WJCN
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POC: Veronica Burley 202-564-7084

Please plan to arrive 10-15 minutes prior to the meeting to be screened by security. Please have the guard call me at 202-564-7084 to be escorted to our offices. If you need any other assistance, please let me know. Thank you.

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CC: Roewer, James [JRoewer@eei.org]
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Message

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CC: Jackson, Ryan [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=38bc8e18791a47d88a279db2fec8bd60-Jackson, Ry]; Dravis, Samantha [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ece53f0610054e669d9dff0b3a842df-Dravis, Sam]; Bolen, Brittany [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=31e872a691114372b5a6a88482a66e48-Bolen, Brit]; Brown, Byron [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9242d85c7df343d287659f840d730e65-Brown, Byro]; Fatouhi.david@epa.gov; Davis, Patrick [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=7fca02d1ec544fbdd6fb2e7674e06b2-Davis, Patr]; Breen, Barry [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=1b44bce1a71e4a95acaf82f2fbc858b0-BBREEN]; Johnson, Barnes [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=c39e9338cbf04dc3b4b29f78e5213303-Johnson, Barnes]
Subject: Petition for Reconsideration of CCR Rule
Attachments: CCRRulePetitionCoverletter.pdf; Final USWAG Petition for Reconsideration 5.12.2017.pdf

Administrator Pruitt:

Enclosed please find the Utility Solid Waste Activities Group's ("USWAG") Petition for Reconsideration of EPA's final rule titled Rulemaking to Reconsider Provisions of the Coal Combustion Residuals Rule ("CCR Rule"), 80 Fed. Reg. 21302 (April 17, 2015), and a Request for EPA to seek to Hold In Abeyance the Challenge to the Coal Combustion Residuals Rule, No. 15-1219, et al. (D.C. Cir.).

The implementation of efficient, effective and environmentally protective management of CCR under the direction of state regulatory agencies, with support from EPA, is a critical issue for USWAG members. We believe that the modifications to the Rule identified in this Petition will result in a more practical and workable, yet equally protective regulatory program for CCR disposal units. We look forward to working with EPA in making these important and necessary modifications to the CCR Rule.

Please contact me with any questions.

Jim Roewer
Executive Director
USWAG



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May 12, 2017

The Honorable Scott Pruitt
Administrator
U.S. Environmental Protection Agency
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Mail Code 1101A
Washington, DC 20460

Re: Utility Solid Waste Activities Group Petition for Rulemaking to Reconsider Provisions of the Coal Combustion Residuals Rule, 80 Fed. Reg. 21302 (April 17, 2015), and Request for EPA To Hold in Abeyance Challenge to Coal Combustion Residual Rule, No. 15-1219, et al. (D.C. Cir.)

Dear Administrator Pruitt:

Enclosed please find the Utility Solid Waste Activities Group's ("USWAG") Petition for Reconsideration of EPA's final rule titled Rulemaking to Reconsider Provisions of the Coal Combustion Residuals Rule ("CCR Rule"), 80 Fed. Reg. 21302 (April 17, 2015), and a Request for EPA to seek to Hold In Abeyance the Challenge to the Coal Combustion Residuals Rule, No. 15-1219, et al. (D.C. Cir.).

As set forth in the Petition, USWAG is not seeking reconsideration of the entire Rule, but only those provisions that warrant modification, revision or repeal due to recent legislation fundamentally altering the self-implementing nature of the Rule to one implemented through enforceable permit programs, as well as the Administration's Executive Orders on regulatory reform.

We also ask that EPA take action as soon as possible to extend the Rule's impending compliance deadlines given that owners/operators of coal combustion residuals ("CCR") units are making critical operating decisions based on elements of the CCR Rule that likely will be implemented differently under CCR permit programs and provisions that should be modified based on the re-evaluation of the Rule under the President's Executive Orders on regulatory reform. Extension of the compliance deadlines also is necessary to ensure alignment of the CCR Rule's

requirements with EPA's recent postponement of the compliance dates for implementation of the Final Effluent Limitations Guidelines and Standards Rule for the Steam Electric Power Generating Point Source Category ("ELG Rule"). Because it was EPA's intent that the CCR and ELG Rules work in tandem, both in terms of content and timing, extension of the CCR Rule compliance deadlines is necessary so that owners/operators of CCR units are not forced to make decisions affecting these units under the CCR Rule without first understanding their obligations under the ELG Rule.

Finally, because certain provisions of the Rule identified in the attached Petition are the subject of ongoing litigation challenging the Rule, USWAG requests that EPA seek hold the case in abeyance so that the Agency can reconsider its positions in the litigation in light of the recent statutory changes and Executive Orders.

USWAG believes that the modifications to the Rule identified in this Petition will result in a more practical and workable, yet equally protective regulatory program for CCR disposal units. We look forward to working with EPA in making these important and necessary modifications to the CCR Rule.

Sincerely,

A handwritten signature in black ink, appearing to read "James Roewer".

James Roewer
Executive Director

Enclosure

cc: Samantha Dravis
Brittany Bolen
Ryan Jackson
Byron Brown
David Fatouhi
Patrick Davis
Barry Breen
Barnes Johnson

In the United States Environmental Protection Agency

**Utility Solid Waste Activities Group Petition for Rulemaking to
Reconsider Provisions of the Coal Combustion Residuals Rule, 80 Fed.
Reg. 21,302 (April 17, 2015), and Request to Hold in Abeyance Challenge
to Coal Combustion Residual Rule, No. 15-1219, et al. (D.C. Cir.)**

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Appendix A: Use of Background Concentration as Groundwater Protection Standard for Appendix IV Constituents without Federal Maximum Contaminant Levels (MCLs), Gradient (May 2, 2017)

RELIEF SOUGHT

The Utility Solid Waste Activities Group¹ ("USWAG") hereby petitions the United States Environmental Protection Agency ("EPA") pursuant to 5 U.S.C. § 553(e) and 42 U.S.C. § 6974(a) for a rulemaking to reconsider specific provisions of the Final Rule entitled Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals² (the "CCR Rule," the "Final Rule," or "Rule").³ USWAG is not seeking EPA's reconsideration of the entire CCR Rule, but rather only the provisions of the Rule that warrant modification, revision or repeal due to recent legislation fundamentally altering the self-implementing nature of the Rule, as well as the Administration's Executive Orders on regulatory reform.

An extension of the upcoming CCR Rule compliance deadlines is also necessary, and the EPA should take immediate action to extend those deadlines for several critically important reasons. First, owners/operators of coal combustion

¹ USWAG, formed in 1978, is an association of over one hundred and twenty electric utilities, power producers, utility operating companies, and utility service companies located throughout the United States, including the Edison Electric Institute ("EEI"), the American Public Power Association ("APPA"), and the National Rural Electric Cooperative Association ("NRECA"). Together, USWAG members represent more than 73% of the total electric generating capacity of the United States, and serve more than 95% of the nation's consumers of electricity and 92% of the nation's consumers of natural gas.

² 80 Fed. Reg. 21,302 (April 17, 2015).

³ Section 553(e) of the Administrative Procedure Act provides that interested persons have "the right to petition for the issuance, amendment, or repeal of a rule." Similarly, section 7004 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6974(a), provides that "any person may petition the Administrator for the promulgation, amendment or repeal of any regulation under this chapter."

residuals (“CCR”) units are now facing decisions on whether to make large capital expenditures to comply with central requirements of the CCR Rule—requirements that will be evaluated for potential modification or replacement pursuant to this reconsideration Petition. Second, many of these requirements also may change or be implemented differently with the transition to state permit programs. Finally, an extension is necessary to ensure alignment of the CCR Rule’s requirements with EPA’s recent postponement of the compliance dates for implementation of the Final Effluent Limitations Guidelines and Standards Rule for the Steam Electric Power Generating Point Source Category⁴ (“ELG Rule”). Coordination of the CCR and ELG Rules’ compliance time frames has been one of the overarching objectives of the Agency to ensure that owners/operators of CCR units are not forced to make decisions affecting these units under the CCR Rule without first understanding the ELG requirements.⁵

In addition, given that certain of the provisions of the Rule identified in this Petition for reconsideration are the subject of ongoing litigation challenging the CCR Rule,⁶ USWAG also requests that EPA seek to hold the case in abeyance so

⁴ 80 Fed. Reg. 67,838 (Nov. 3, 2015).

⁵ 80 Fed. Reg. at 21,428.

⁶ *Utility Solid Waste Activities Group, et al. v. EPA, et al.*, No. 15-1219 (D.C. Cir.) (consolidated with Nos. 15-1221, 15-1222, 15-1223, 15-1227, 15-1228, and 15-1229) (hereinafter “CCR Litigation”).

that the Agency can reconsider its positions in the litigation in light of the recent statutory changes and Executive Orders.

INTRODUCTION

EPA's CCR Rule, found at 40 C.F.R. Part 257, regulating the disposal of CCR by the electric utility sector will result in significant economic and operational impacts to coal-fired power generation. Rapidly approaching compliance deadlines for the most impactful components of the Rule are forcing owners or operators of power plants to make irreversible and tremendously significant long-term business and operational decisions regarding how to comply with the Rule. In many cases, these compliance decisions include the closure of CCR disposal units, and even the premature closure of power plants. Put simply, if there is no cost-effective option to manage CCR—the byproduct from the combustion of coal—the use of coal to produce power is significantly burdened, and the economic viability of coal-fired power plants is jeopardized. The CCR Rule is having precisely this adverse effect on coal-fired power generation across the country.

Many of the problems underlying the Rule can be solved through the use of site-specific, risk based management standards that EPA chose not to include in the Final Rule due to the Rule's underlying self-implementing regulatory scheme. But recently enacted legislation now allows the CCR Rule to be implemented

through state CCR permit programs or systems of prior approval (collectively, “state CCR permit programs”). This fundamental change, along with recently issued Executive Orders governing regulatory reform, warrants reconsideration and modification of the CCR Rule to incorporate such site-specific, risk-based provisions for assuring the proper management and disposal of CCR.

As stated above, USWAG is not seeking to eliminate or have EPA reconsider the entire CCR Rule. Indeed, USWAG strongly endorsed and supported EPA’s development of RCRA Subtitle D non-hazardous waste rules for the disposal of CCR. Importantly, however, the necessary modifications to the Rule identified in this Petition will produce a more balanced and cost-effective Rule, while also ensuring that CCR disposal units are regulated in a manner meeting RCRA’s statutory standard of ensuring “no reasonable probability of adverse effects on health or the environment.”⁷

We begin by providing an overview of the CCR Rule and then identify the reasons why reconsideration and modification of the Rule is necessary in light of the new legislation and to achieve the regulatory reform objectives of the Executive Orders. The Petition also identifies why it is critical for EPA promptly to extend the Rule’s upcoming compliance deadlines given that many owner/operators must make long-term strategic and operational decisions over the

⁷ 42 U.S.C. § 6944(a).

next few months in order to assure compliance with current CCR Rule requirements. As discussed below, we urge EPA to take action as soon as possible to extend these compliance deadlines so that these owners/operators are not left with stranded assets or undertake plant closures in order to comply with elements of the Rule that EPA appropriately determines warrant modification and/or are implemented differently under state permit programs. Finally, we identify the specific provisions of the Rule requiring modification and, given that certain of these provisions are subject to ongoing litigation challenging the CCR Rule, request that EPA seek to hold the case in abeyance while EPA reconsiders its positions in the litigation.

OVERVIEW OF THE CCR RULE

The CCR Rule regulates the disposal of CCR at electric utilities as a non-hazardous solid waste under Subtitle D of RCRA. The Rule establishes minimum federal criteria for determining which CCR landfills and surface impoundments qualify as “sanitary landfills” and may continue to operate, and which landfills and surface impoundments are “open dumps” and must close. A precedent setting aspect of the Rule is EPA’s decision to apply these criteria to inactive CCR surface impoundments (*i.e.*, impoundments that ceased receiving CCR *before* the effective date of the Rule), thus resulting in the regulation of inactive CCR surface impoundments in the same manner as operating impoundments. CCR landfills and

surface impoundments that fail to meet the Rule's criteria are considered "open dumps" subject to closure. The Rule became effective on October 19, 2015.

The major criteria in the Rule include (1) restrictions on the siting of CCR units, including the imposition of location restrictions on existing surface impoundments that have been sited and in operation for years; (2) standards for the design of CCR units, such as specified liner requirements that can effectively supersede differing state requirements; (3) operating conditions, such as mandated inspections of landfills and surface impoundments and fugitive dust controls; (4) structural integrity requirements for surface impoundments that, if not met by a specified time period, mandate the prompt closure of the unit; (5) groundwater monitoring and corrective action requirements, which include the establishment of groundwater protection standards that, in the case of certain constituents, are set at background levels—even though these levels can be far lower than established and accepted risk-based levels; (6) two specified closure options, including (i) closure with CCR in place in conformance with specified dewatering, stabilization and cap design standards, followed by a minimum of 30-years of post-closure care and groundwater monitoring, or (ii) closure by removing the CCR from the unit and certifying compliance with the mandated groundwater protection standards, with no subsequent post-closure care; and (7) recordkeeping and reporting requirements

demonstrating compliance with the criteria that must be posted to a publicly available website.

Because the Rule was promulgated as a self-implementing rule, whether in fact a facility is in compliance with the above-referenced criteria is determined by a Qualified Professional Engineer (“QPE”), whose certifications are posted to the facility’s publicly available website. The QPE’s certification is then subject to review by EPA, the states, and citizen groups and, if there is disagreement, the facility’s compliance with the Rule can be challenged by EPA through an EPA administrative enforcement order⁸ or through a RCRA citizen suit brought by a citizen group or a state in federal district court.⁹ This unorthodox enforcement scheme has led to a degree of uncertainty, as QPE certifications are subject to challenge and possible reversal *after* the certification is made and the applicable regulatory deadline has passed.

Moreover, failure to comply with certain of the Rule’s criteria leads to the mandated closure of the CCR disposal unit within very short time frames. Of most importance, the detection of a release to groundwater from an unlined surface impoundment above a mandated groundwater protection standard—even where the

⁸ When the Rule was originally promulgated in April 2015, EPA did not have statutory authority to enforce the Rule. However, the recently enacted Water Infrastructure Improvements for the Nation Act (“WIIN Act”), which, in part, amended Subtitle D of RCRA to authorize the states to implement the CCR Rule through state permit programs, also gave EPA authority to directly enforce the Rule.

⁹ See 42 U.S.C. § 6972.

groundwater protection standard is background and far below accepted health-based levels—requires the prompt closure of the impoundment even if other corrective action measures may be available at considerably less cost for ensuring the protection of human health and the environment based on site-specific circumstances.

Certain of the Rule's criteria have already taken effect, including fugitive dust controls, unit inspections and the preparation of closure plans. However, the Rule's most demanding and onerous requirements (including in particular its groundwater monitoring requirements, with the attendant regulatory ramifications of forced closures of CCR disposal units and corrective action) are scheduled to go into effect on October 17, 2017, approximately five months from the filing of this Petition.

REASONS TO RECONSIDER THE RULE

A. The Self-Implementing Nature of the CCR Rule Results in Inflexible Requirements that Impose Tremendous Costs on Regulated Entities.

The enormous costs associated with the CCR Rule are largely attributable to the Rule's burdensome, inflexible, and often impracticable requirements, which do not allow for the type of site-specific, risk-based management techniques contained in many state coal ash regulatory programs and other federal solid waste regulations. Instead, the CCR Rule operates independently of existing state risk-

based CCR control programs.¹⁰ Therefore, owners/operators of coal-fired power plants must often comply with two sets of CCR disposal controls: those imposed by the CCR Rule and any additional state requirements.¹¹

This dual and inefficient regulatory regime is the result of the self-implementing nature of the CCR Rule. At the time the CCR Rule was promulgated in 2015, the underlying statute, RCRA, did not allow for the Rule to be delegated to the states or to be implemented through state or federal permit programs. Instead, as explained above, regulated entities are responsible for “self-implementing” the Rule, meaning that owners/operators of coal-fired power plants must ascertain for themselves what is required to comply with the Rule and then certify such compliance on a publicly available website. Alleged non-compliance with the Rule is enforced through RCRA’s citizen suit provision or directly by EPA through the issuance of administrative orders.

Because of this self-implementing scheme, EPA declined to include in the Final Rule many site-specific, risk-based provisions contained in other state and federal solid waste programs, and instead created a monolithic, one-size-fits-all regulatory regime. For example, EPA removed certain provisions from the Final Rule—provisions which were contained in the 2010 CCR proposal¹² and drawn

¹⁰ 80 Fed. Reg. at 21,333.

¹¹ *Id.*

¹² 75 Fed. Reg. 35,128 (June 21, 2010).

from EPA's Municipal Solid Waste Landfills ("MSWLF") program under 40 C.F.R. Part 258—that would have allowed for tailoring of the Rule's groundwater monitoring and corrective action programs based on site-specific conditions. EPA removed this flexibility precisely because there is no regulatory authority overseeing implementation of the CCR Rule through an enforceable permit program. As EPA reasoned, "the possibility that a state may lack a permit program for CCR units made it impossible to include some of the alternatives available in [the MSWLF program], which establish alternative standards that allow a state, as part of its permit program to tailor the default requirements to account for site specific conditions at the individual facility."¹³

This has resulted in a CCR Rule reflecting risk assumptions and regulatory criteria based on the "lowest common denominator." EPA readily acknowledged this point when it determined that any unlined impoundment contaminating groundwater must, in all circumstances, close:

EPA acknowledges that it may be possible at certain sites to engineer an alternative to closure of the unit that would adequately control the source of the contamination and would otherwise protect human health and the environment. However, the efficacy of those engineering solutions will necessarily be determined by individual site conditions. As previously discussed, the regulatory structure under which this rule is issued effectively limits the Agency's ability to develop the type of requirements that can be individually tailored to accommodate particular site conditions. Under [RCRA] sections

¹³ 80 Fed. Reg. at 21,396-97.

1008(a) and 4004(a), EPA must establish national criteria that will operate effectively in the absence of any guaranteed regulatory oversight (i.e., a permitting program), to achieve the statutory standard of “no reasonable probability of adverse effects on health or the environment” at all sites subject to the standards.¹⁴

This lack of site-specific consideration has resulted in an inflexible and overly-conservative Rule that is imposing tremendous operational costs on the power industry and is threatening the premature closure of CCR disposal units. As explained below, however, the statutory structure underpinning the enforcement scheme for the Rule has fundamentally changed since its promulgation in 2015. Therefore, there is no longer any basis for the Rule’s inflexible requirements, which, as noted above, even EPA acknowledges can force the closure of units that are otherwise capable of remaining open in a manner that protects human health and the environment. Furthermore, these inflexible requirements are the exact types of unnecessarily burdensome regulation that EPA has been directed to repeal, replace, or modify under the recent Executive Orders relating to regulatory reform.

B. By Authorizing State CCR Permit Programs, the WIIN Act Fundamentally Altered the CCR Rule’s Enforcement Scheme.

On December 16, 2016, President Obama signed into law the Water Infrastructure Improvements for the Nation Act (“WIIN Act”), which, in part, amended Subtitle D of RCRA to authorize the states to implement the CCR Rule

¹⁴ *Id.* at 21,371.

through state permit programs.¹⁵ Specifically, the WIIN Act authorizes the states to submit an application requesting EPA’s approval to administer the CCR Rule through a state permit program *in lieu of* the self-implementing CCR Rule. Where states do not seek to administer the Rule or where a state’s application is denied by EPA—referred to as “Nonparticipating States”—EPA is directed to implement the CCR Rule through a federal permit program.¹⁶ This statutory change fundamentally transforms the CCR Rule from a self-implementing program, into a rule that will be implemented through either a state or EPA permit program (much like traditional federal environmental programs).

With the WIIN Act’s change to the implementation of the CCR Rule, EPA’s original rationale for excluding the site-specific, risk-based tailoring provisions from the Final Rule—its concern for “abuse” by entities operating under the self-implementing regime—no longer exists. Therefore, the Rule should be amended as soon as possible to incorporate the risk-based management options contained in state and other EPA solid waste programs, eliminating the burdensome one-size-fits-all approach of the current Rule.

¹⁵ The legislation amends section 4005 in Subtitle D of RCRA (“Upgrading of Open Dumps”) by adding a new subsection (d) to the section entitled “State Programs for Control of Coal Combustion Residuals.”

¹⁶ The requirement that EPA implement a CCR permit program in a Nonparticipating State is conditioned on Congress appropriating funds for EPA to administer a CCR permit program. Nonetheless, even without such direct appropriations, nothing in the statute prohibits EPA from administering CCR permit programs in Nonparticipating States if it so chooses.

C. The Policies Established by Executive Orders on Regulatory Reform Support Modification of the CCR Rule.

In addition to the WIIN Act, the Rule requires reconsideration pursuant to the policies set forth in the Administration’s recent series of Executive Orders regarding regulatory reform, including the regulatory reform agenda set forth in Executive Order 13777 (“EO 13777”).¹⁷ Reconsideration of the Rule also is consistent with the policies expressed in the President’s Executive Order 13771 on “Reducing Regulation and Controlling Regulatory Costs”¹⁸ (“EO 13771”) and the President’s Executive Order 13783 on “Promoting Energy Independence and Economic Growth”¹⁹ (“EO 13783”). We discuss these EOs below and explain why individually, and collectively, they warrant modification to the CCR Rule.

1. EO 13777

One of the key directives in EO 13777 is for agency regulatory reform task forces (“RRTFs”) to “evaluate existing regulations and make recommendations to the agency head regarding their repeal, replacement, or modification, consistent

¹⁷ See Executive Order 13777, *Enforcing the Regulatory Reform Agenda* (Feb. 24, 2017), 82 Fed. Reg. 12,285 (Mar. 1, 2017).

¹⁸ Executive Order 13771, *Reducing Regulation and Controlling Regulatory Costs* (Jan. 30, 2017), 82 Fed. Reg. 19339 (Feb. 3, 2017).

¹⁹ Executive Order 13783, *Promoting Energy Independence and Economic Growth* (Mar. 28, 2017), 82 Fed. Reg. 16,093 (Mar. 31, 2017).

with applicable law.”²⁰ The RRTFs have until May 25, 2017, to make their recommendations.²¹

In undertaking this task, EO 13777 directs that the RRTF shall attempt to identify regulations that, among other things:

- (i) eliminate jobs or inhibit job creation;
- (ii) are outdated, unnecessary, or ineffective;
- (iii) impose costs that exceed benefits; or
- (iv) create a serious inconsistency or otherwise interfere with regulatory reform initiatives and policies.²²

The CCR Rule meets *all* of these criteria.

First, EPA itself readily acknowledged in issuing the Final Rule that the Rule’s costs far exceed its benefits, with annual costs conservatively exceeding the Rule’s benefits by a range of at least \$273 to \$441 million per year.²³ Even these ranges far underestimate the gaps between the Rule’s compliance costs versus its estimated benefits because they fail to take into account the excessive

²⁰ EO 13777 § 4. EO 13777 refers to the definition of “regulation” or “rule” found in EO 13771, which includes, in pertinent part, “an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy or to describe the procedure or practice requirements of an agency” EO 13771 § 4.

²¹ By imposing a rigorous deadline on the Task Force, EO 13777 recognizes the urgency of addressing overly burdensome regulations. Ultimately, it is the customers of the electric utility industry who suffer the economic burden of exorbitantly expensive rules having no concomitant environmental benefit. This burden is exacerbated when important issues regarding those rules go unresolved for extended periods of time (*e.g.*, the Mercury and Air Toxics rule) and, as a result, the regulated must move forward with burdensome regulations before they can be repealed or revised. Uncertainty also contributes to potential instability in energy delivery. Thus, in the spirit of EO 13777, the Agency should move expeditiously to reconsider and revise the Rule.

²² EO 13777 § 3(d)(i)-(iv).

²³ 80 Fed. Reg. at 21,460.

compliance costs brought about by the Rule's overly stringent one-size-fits-all operating, groundwater monitoring and corrective action standards that cannot be tailored to reflect site-specific characteristics of a particular unit. Consistent with EO 13777, a rule whose costs exceeds its benefits should be re-evaluated and modified.

The Rule also will cause job losses due to the premature closure of power plants caused by the forced closure of CCR disposal units. Similarly, the provisions of the Rule identified for reconsideration in this Petition are outdated and unnecessary, as they fail to reflect the fundamental statutory change brought about by the WIIN Act with respect to the implementation of the Rule through enforceable permit programs in lieu of the original self-implementing regime. Finally, as discussed below, the adverse effects on coal-powered energy generation caused by the Rule's current implementation scheme and overly burdensome regulatory regime are directly inconsistent, with EO 13783.

For all these reasons, the CCR Rule should be chief among the EPA RRTF's recommendations under EO 13777 for repeal, replacement or modification as set forth in this Petition.

2. EO 13771

The CCR Rule also should be reconsidered as part of EPA's compliance with EO 13771. Among other things, EO 13771 directs that "for every one new

regulation issued, at least two prior regulations be identified for elimination, and that the cost of planned regulations be prudently managed and controlled through the budgeting process.”²⁴ Agencies are to achieve a net incremental regulatory cost of zero in Fiscal 2017²⁵ by offsetting the costs of new regulations during the current fiscal year with costs eliminated from existing regulations.²⁶

By reconsidering the CCR Rule and taking its costs properly into account when promulgating a modified CCR Rule, EPA can engage in regulatory burden reduction as contemplated by EO 13771, thereby facilitating the promulgation of other rules, including a revised CCR Rule that provides meaningful environmental benefits.

3. EO 13783

EO 13783 provides even further support for the requested modifications to the CCR Rule identified in this Petition. EO 13783 states, in pertinent part, that it is the national policy of the United States and executive agencies to “immediately review existing regulations that potentially burden the . . . use of domestically produced energy resources and appropriately *suspend, revise, or rescind* those that

²⁴ EO 13771 § 1.

²⁵ “For fiscal year 2017, which is in progress, the heads of all agencies are directed that the total incremental cost of all new regulations, including repealed regulations, to be finalized this year shall be no greater than zero. . . .” *Id.* § 2(b).

²⁶ *Id.* § 2(c) (“incremental costs associated with new regulations shall, to the extent permitted by law, be offset by the elimination of existing costs associated with at least two prior regulations.”).

unduly burden the development of domestic energy resources beyond the degree necessary to protect the public interest or otherwise comply with law.”²⁷ To achieve this national policy objective, EO 13783 directs that heads of federal agencies immediately “review all existing regulations, orders, guidance documents, policies, and any other similar agency actions (collectively, agency actions) that potentially burden the development or use of domestically produced energy resources, with particular attention to oil, natural gas, *coal*, and nuclear energy resources.”²⁸

Pursuant to the above directives, within 180 days of the issuance of EO 13783, the heads of federal agencies are to submit final reports to the Vice President and Director of the Office of Management and Budget (among others) detailing the regulations identified by the agency as potentially burdening the development or use of domestically produced energy resources, including with particular attention to *coal*, oil, natural gas and nuclear energy resources. After submission of these final reports, the heads of federal agencies “shall as soon as practicable, suspend, revise, or rescind, or publish for notice and comment proposed rules suspending, revising, or rescinding, those actions, as appropriate and consistent with law.”²⁹

²⁷ EO 13783 § 1(c) (emphasis added).

²⁸ *Id.* at § 2(a) (emphasis added).

²⁹ *Id.* at § (g). Agencies are directed to coordinate such regulatory reform with their activities undertaken pursuant to EO 13771, discussed above. *Id.*

The CCR Rule is an “agency action” that directly burdens the use of coal as an energy resource by imposing unduly stringent and extremely costly regulations on the management of CCR—a coal combustion byproduct. Put simply, the continued use of coal for electricity generation is effectively precluded if there is no economical option for managing the residuals from its use. These burdens are only compounded by a suite of other major rules affecting coal-fired power plants. And, ultimately, the costs imposed by these regulations will be borne by consumers of the electricity.

Therefore, as currently written and implemented, the CCR Rule is having significant adverse effects on the domestic use of coal as an energy source in direct contradiction of the national energy policy set forth in EO 13783. This does not have to be the case. The identified revisions, and in certain cases repeal, of the specific provisions of the CCR Rule discussed below will remove these unwarranted regulatory burdens on the management of CCR and the related burdens on the use of coal as an energy source—none of which are mandated by the statute. Rather, with the enactment of a new regulatory paradigm allowing for implementation through CCR permit programs, EPA can move from a monolithic, one-size-fits-all regulatory regime to a site-specific and risk-based approach, all while continuing to ensure that CCR will be managed in a manner meeting

RCRA's Subtitle D standard of ensuring "no reasonable probability of adverse effects on health or the environment."³⁰

Therefore, it is appropriate for the CCR Rule to be included in the final report prepared under EO 13783 and then revised as soon as practicable consistent with the request for reconsideration set forth in this Petition.

NEED TO EXTEND CCR RULE COMPLIANCE DEADLINES

Although certain of the CCR Rule's operating criteria have already taken effect, other provisions of the CCR Rule, including the Rule's groundwater monitoring and associated corrective action provisions, have not. As discussed in more detail below, it is critically important to extend the compliance dates of these remaining CCR Rule requirements so that electric utilities do not make irreversible operational and significant investment decisions (including decisions on plant closures) before EPA has time to reconsider the provisions of the Rule identified in this Petition and make any necessary Rule modifications. In addition, an extension of the Rule's upcoming timeframes is necessary to allow time for implementation of the Rule through enforceable permit programs as contemplated under the WIIN Act and, equally important, to ensure alignment of the CCR Rule's remaining compliance dates with the ELG Rule, which was recently stayed while EPA reconsiders many of the key requirements of that rule.

³⁰ 42 U.S.C. § 6944(a).

A. Extension of CCR Rule Deadlines is Necessary to Allow Time to Transition to State Permit Programs and Undertake the Necessary Substantive Changes to the Rule.

Given the anticipated implementation of the Rule through state permit programs—including the adoption of requirements that may differ, yet be equally protective as the federal Rule—EPA should take immediate action to extend the CCR Rule’s upcoming compliance deadlines to coincide with implementation of the Rule through CCR permit programs. This is necessary to allow time for the transition of the Rule to state-based permit programs, under which elements of the Rule, including the groundwater monitoring program, can be tailored to reflect the site-specific characteristics of individual CCR units. Similarly, an extension of time is necessary for EPA to evaluate the requested modifications to the CCR Rule identified in this Petition and to undertake rulemakings to implement those changes, many of which will likely be reflected in state CCR permit programs. As discussed below, these changes will allow for implementation of the Rule’s requirements in a more balanced and cost-effective manner while meeting RCRA’s statutory standard of ensuring “no reasonable probability of adverse effects on health or the environment.”³¹

Indeed, we understand that EPA is in the process of preparing guidance detailing the procedures states should use to apply for and receive approval to

³¹ 42 U.S.C. § 6944(a).

implement the CCR Rule through state permit programs.³² Many states, including Missouri, Georgia and Kansas, have reportedly already expressed an interest in obtaining or are already seeking EPA approval to administer such programs. Therefore, it is expected that many states will be in the position to implement the requirements of the CCR Rule through state permit programs in the near future, perhaps before the end of this year, with more states to follow later.

This transition to state permit programs necessitates an extension of the Rule's deadlines to avoid large-scale capital expenditures by the regulated community for elements of the Rule that are likely to be changed significantly through the reconsideration Petition or at least implemented differently under future permits. Electric utilities should not be forced to invest significant and irretrievable capital resources to comply with requirements that are likely to change.

Chief among these deadlines is the fast approaching October 17, 2017 requirement for initiating the Rule's groundwater monitoring program,³³ which sets off a series of cascading requirements, including possibly onerous corrective action requirements and, in some cases, forced closure of CCR units and power

³² See letter dated April 28, 2017 from Administrator Pruitt to Governor Sandoval of Nevada.

³³ 40 C.F.R. §§ 257.90(b), 257.90(e).

plants.³⁴ As currently written, the Rule’s groundwater monitoring program does not allow for the consideration of any site-specific characteristics, such as groundwater hydrology, local geological characteristics, or proximity to surface water and drinking water receptors. But, now, state regulators will be in a position to tailor, as appropriate, the applicable groundwater standards to reflect the risks and groundwater characteristics of individual sites. Extending the Rule’s groundwater monitoring program to coincide with the adoption and implementation of the Rule through state permit programs will avoid needless capital expenditures, the likely closure of CCR units, and perhaps even the premature closure of power plants, for elements of the Rule that may change as a result of the reconsideration rulemaking or be implemented differently under state CCR permit programs.

B. Extension of CCR Rule Deadlines is Necessary to Allow for Coordination with ELG Rule.

An extension of the Rule’s compliance deadlines also is critical to ensure coordination with the time frames in the ELG Rule. Significantly, EPA recently

³⁴ See *id.* §§ 257.90-.98; see also 80 Fed. Reg. at 21,397 (discussing the “phased approach” to groundwater monitoring).

granted two petitions for reconsideration³⁵ of the ELG Rule.³⁶ As part of this reconsideration, EPA has postponed the compliance deadlines in the ELG Rule through an administrative stay and announced its plan to extend or revise the ELG compliance deadlines through a subsequent notice and comment rulemaking over the next few months.³⁷

Although the ELG Rule and the CCR Rule are separate regulations issued pursuant to two separate statutes, both rules impact the management of CCR waste streams and the operation of CCR surface impoundments. Because of this, EPA correctly reasoned in promulgating the CCR Rule that it was necessary to align the structure and timelines of the CCR Rule to account for the content and timelines of the ELG Rule. Therefore, in establishing the compliance time frames in the CCR Rule, EPA “accounted for other Agency rulemakings that may affect owners or operators of CCR units,” including specifically the ELG Rule.³⁸ EPA also explained that “effective coordination of any final RCRA requirements with the ELG requirements would be sought in order to minimize the overall complexity of

³⁵ Petition to reconsider the Final Rule, submitted by U.S. Small Business Administration (April 5, 2017); Petition to reconsider the Final Rule, submitted by Utility Water Act Group (March 24, 2017) (available at <https://www.epa.gov/eg/steam-electric-power-generating-effluent-guidelines-petitions-reconsideration>).

³⁶ April 12, 2017 Letter from EPA Administrator Scott Pruitt to Harry M. Johnson, Major Clark, and Kevin Bromberg (available at https://www.epa.gov/sites/production/files/2017-04/documents/steam-electric-clg_uwag-sba-petition_epa-response_04-12-2017.pdf).

³⁷ 82 Fed. Reg. 19,005 (April 25, 2017).

³⁸ *Id.*

the two regulatory structures, and facilitate implementation of engineering, financial, and permitting activities.”³⁹

Accordingly, the compliance deadlines in the CCR Rule were established by EPA with the full expectation that the contents and timing of the final ELG Rule would be understood by owners or operators of CCR units.⁴⁰ This was so that the CCR Rule would not force any major operational decisions (such as closure or retrofit of a CCR unit) before an owner or operator of a CCR unit could properly take into account and consider the associated implications under the ELG Rule, allowing “ample time for the owners and operators of CCR units to *understand the requirements of both regulations* and make the appropriate business decisions.”⁴¹ EPA recognized this was particularly true with respect to CCR Rule obligations that could require a surface impoundment to undergo closure or retrofit, explaining that “[a] decision on what action to take with that unit may ultimately be directly influenced by the requirements of the ELG rule.”⁴²

Consistent with the above position, EPA stated that the CCR Rule “will not require owners or operators of CCR units to make decisions about these units

³⁹ 80 Fed. Reg. at 21,313.

⁴⁰ See *id.* at 21,428 (“Thus, under the final timeframes in this [CCR] rule, any such decision [whether to retrofit a CCR impoundment] will not have to be made by the owner or operator of a CCR unit until well after the ELG rule is final and the regulatory requirements are well understood.”).

⁴¹ *Id.* (emphasis added).

⁴² *Id.*

[including closure decisions] without first understanding the implications that such decisions would have meeting the requirements of [the ELG].”⁴³ Obviously, however, owners or operators of CCR units are not in a position to make this type of informed decision given EPA’s recent decision to reconsider the content and compliance time frames of the ELG Rule.

For example, a decision on whether to undertake the significant capital investment to retrofit a CCR surface impoundment otherwise required to close under the CCR Rule will turn in large part on whether that impoundment will continue to serve a wastewater management function for an ELG-regulated waste stream—such as bottom ash transport water. But the future role of that impoundment in managing bottom ash transport water under the ELG Rule will not be known until such time as EPA completes its reconsideration of both the timing and content of the ELG Rule. This is precisely the type of predicament that EPA intended to avoid by declaring that it would not force any major compliance decisions under the CCR Rule before a facility could properly take into account and consider the associated implications under the ELG Rule.

In short, because the ELG and CCR Rules were designed to work in tandem, both with respect to content and timing, it is clear that EPA must now also extend the upcoming compliance deadlines in the CCR Rule to coincide with revised

⁴³ *Id.* (emphasis added).

compliance deadlines in the ELG Rule. For similar reasons, other CCR Rule deadlines that should be extended include the time schedules in 40 C.F.R. §§ 257.60-257.64 for assessing compliance with the CCR Rule's location restrictions.

PROVISIONS FOR RECONSIDERATION

As discussed above, in light of the President's Regulatory Reform Orders and the fundamental statutory change brought about by the WIIN Act, EPA should reconsider and modify the provisions of the CCR Rule identified below. Because the CCR Rule can now be implemented through state permit programs, EPA's rationale for not including many of the risk-based provisions contained in the proposed CCR Rule, and currently contained in many existing state CCR permit programs, no longer exists. Many of the recommended provisions for reconsideration discussed below reflect this fundamental statutory change in how the Rule is to be implemented and, accordingly, urge modifications incorporating common sense, risk-based management options into the Rule. In addition, the CCR Rule contains other overly prescriptive requirements that impose unnecessary regulatory burdens on the electric power sector and increase compliance costs without a corresponding environmental benefit. As discussed below, it is appropriate for EPA also to revise these requirements pursuant to the Administration's Executive Orders relating to regulatory reform.

A. Alternative Risk-Based Groundwater Protection Standards

The Rule's groundwater monitoring regime and corrective action requirements are centered around specified groundwater protection standards for the Rule's list of Appendix IV constituents. For most constituents, the groundwater protection standard is based on maximum contaminant levels ("MCLs"), which are standards set by EPA for drinking water quality. Several Appendix IV constituents (molybdenum, lead, cobalt, and lithium), however, do not have an MCL. For these constituents, the groundwater protection standard defaults to background levels.

In the 2010 proposal, EPA included a provision allowing for the establishment of alternative risk-based groundwater protection standards for Appendix IV constituents that do not have an MCL.⁴⁴ This has long been the regulatory regime in the MSWLF program and has not been the subject of any controversy.⁴⁵ Even under EPA's Subtitle C hazardous waste program, permit writers are authorized to establish site-specific groundwater protection standards based on the unique conditions of the regulated unit.⁴⁶ EPA removed this option from the Final Rule, however, explaining that such flexibility was "inappropriate in a self-implementing rule, as it was unlikely that a facility would have the

⁴⁴ 75 Fed. Reg. at 35,249 (proposed 40 C.F.R. § 257.95(h)).

⁴⁵ See 40 C.F.R. § 258.55(h)(3)(i).

⁴⁶ See *Id.* § 264.94(b).

scientific expertise necessary to conduct a risk assessment, and was too susceptible to potential abuse.”⁴⁷

By prohibiting risk-based groundwater protection standards, the Rule mandates the use of background levels even when those levels are far below any risk-based standard that would otherwise be required by a state or even by EPA under other federal cleanup programs (where risk-based remediation levels are routinely used). This means that a facility may be forced into the Rule’s burdensome corrective action program, even if contamination at the facility does not exceed an acceptable risk-based level. And, more importantly, the ultimate cleanup standard under corrective action in these circumstances is set at background, even if the treatment required is far more costly than treating to an acceptable risk-based level. This overly prescriptive and conservative approach thus imposes compliance costs that far exceed any environmental benefit and is the type of regulation targeted for regulatory reform under the Executive Orders.

The Appendix IV constituent cobalt is a good example of the illogical result compelled by the Rule’s inflexible approach. As explained in the attached report prepared by Gradient Corporation (Appendix A), EPA has established a risk-based level for cobalt—referred to as a “Regional Screening Level” or “RSL”—of 6 ug/L in groundwater. However, the median background level of cobalt in groundwater

⁴⁷ 80 Fed. Reg. at 21,405.

is 0.17 ug/L, which is *35 times lower* than the RSL developed for cobalt by EPA.

And, the median concentration of cobalt in CCR leachate is 1 ug/L, which is *six times lower* than the health-based standard for cobalt established by EPA.

Therefore, at the vast majority of CCR facilities, no remediation would ever be required to achieve the health-based benchmarks for cobalt in order to protect human health and the environment.

But this is not how the CCR Rule works. Instead, because cobalt does not have an MCL and facilities are not allowed to set the groundwater protection standard at an acceptable risk-based level, facilities would have to meet the groundwater protection standard of 0.17 ug/L,⁴⁸ even though that standard is *35 times lower* than EPA's own risk-based standard. Therefore, facilities that contain the median CCR leachate concentration of 1 ug/L, which itself is six times lower than EPA's risk-based level for cobalt, would still have to spend hundreds of thousands of dollars (if not more) in groundwater remediation costs to achieve a typical (median) cobalt background level of 0.17 ug/L.⁴⁹

And, worse, in the case of unlined CCR surface impoundments, exceedance of a groundwater protection standard results in the mandated cessation of receipt of

⁴⁸ This assumes that background is the 0.17 ug/L, the median concentration of cobalt in groundwater.

⁴⁹ In contrast, MSWLFs that receive CCR for disposal would be allowed to use risk-based groundwater protection standards under 40 C.F.R. Part 258, since MSWLFs that receive CCR are not regulated under the CCR Rule. See 40 C.F.R. § 257.50(i).

CCR within six month and the commencement of closure of the unit. This huge expenditure of time and resources, combined with the forced closure of surface impoundments in circumstances where a groundwater protection standard is below health-based levels and/or requires more treatment than otherwise necessary, provides no incremental benefit to human health and the environment.

There is absolutely no reason for this type of expenditure of resources under the CCR Rule to continue. First, such an outcome is in direct contravention of EO 13777's direction to identify and revise and/or rescind those regulations whose costs exceed their benefits. Second, now that states and EPA can implement the CCR Rule through enforceable permit programs, states and EPA can readily adopt risk-based groundwater protection standards in lieu of the Rule's overly-conservative requirement to default to background levels. EPA should therefore revise the CCR Rule to allow for the use of alternative risk-based standards in establishing groundwater protection standards for Appendix IV constituents that do not have an MCL.⁵⁰ This provision should be added to the Final Rule at 40 C.F.R. § 257.95(h).

B. Modification to Corrective Action Remedy

The 2010 proposal included a provision, again modeled after the MSWLF program, allowing a facility to determine that undertaking corrective action was

⁵⁰ See 75 Fed. Reg. at 35,249-50 (proposed 40 C.F.R. § 257.95(h)).

not necessary if it would not result in any meaningful environmental benefit (*e.g.*, where the groundwater is not a source of drinking water and there is a low likelihood of contamination migrating offsite).⁵¹ The proposal also allowed facilities, when deciding on the appropriate remedy, to take into account “the desirability of utilizing technologies that are not currently available, but which may offer significant advantages over already available technologies in terms of effectiveness, reliability, safety, or ability to achieve remedial objectives.”⁵² Both of these concepts have long been included in EPA’s MSWLF program, as state permit writers are well qualified to oversee any risk-based decisions made by a facility when evaluating corrective action options.⁵³ Both of these provisions, however, were removed from the Final Rule on the basis that such provisions were “potentially subject to abuse” and not appropriate where there is no state oversight.⁵⁴

With the ability to implement the CCR Rule through state or EPA permit programs, EPA’s concern for “abuse” by individual facilities no longer exists and permit writers should be authorized to tailor corrective action to the individual characteristics of the site. This allowance will achieve burden reduction by allowing for the use of the most efficient remediation technologies and/or avoiding

⁵¹ *Id.* at 35,251 (proposed 40 C.F.R. § 257.97(e)-(f)).

⁵² *Id.* (proposed 40 C.F.R. § 257.97(d)(4)).

⁵³ See 40 C.F.R. §§ 258.57(d)(4), 257.57(e).

⁵⁴ 80 Fed. Reg. at 21,407.

the implementation of corrective action measures that provide no meaningful environmental benefit. Therefore, the above-referenced provisions should be added to 40 C.F.R. § 257.97 to reduce unnecessary regulatory burdens.

C. Allowance for Alternative Points of Compliance and Site-Specific Groundwater Monitoring Constituents

The Final Rule does not allow facilities flexibility to utilize site-specific conditions to determine the appropriate point of compliance for groundwater. Nor does the Rule allow for site-specific modifications to the list of constituents subject to groundwater monitoring. Instead, the Rule requires in all circumstances that the point of compliance be at the edge of the CCR unit—even where this makes little practical sense—and mandates that all constituents in Appendix III and IV be monitored.⁵⁵

Many comments on the 2010 proposal requested that EPA provide facilities the option to determine the appropriate point of compliance for the groundwater monitoring system based on site-specific conditions.⁵⁶ In particular, based on the option included in the MSWLF regulations,⁵⁷ commenters requested that the CCR Rule allow for a point of compliance that is no more than 150 meters from the waste management unit boundary and located on land owned by the owner of the CCR unit, taking into account site-specific factors. Commenters also requested,

⁵⁵ See 40 C.F.R. §§ 257.91(a)(2), 257.94(a).

⁵⁶ See 80 Fed. Reg. at 21,397-98.

⁵⁷ 40 C.F.R. § 258.40(d)

again based on the MSWLF program, that a facility be able to tailor the constituents subject to groundwater monitoring based on site-specific conditions (for example, if a modified list of parameters provided for a reliable indicator of potential releases from the unit). EPA rejected both of these suggestions in the Final Rule, however, explaining that “in the absence of a mandated state oversight mechanism to ensure that the suggested modifications are technically appropriate, these kinds of provisions can operate at the expense of protectiveness.”⁵⁸

With the ability of the states and EPA to implement the Rule through site-specific permit programs properly administered by a regulatory authority, this concern no longer exists. Therefore, the Rule should be revised to include the provisions already in the MSWLF program providing a permitting authority (1) the option to determine the appropriate point of compliance for the groundwater monitoring system based on site-specific conditions, and (2) the ability to tailor the constituents subject to groundwater monitoring based on site-specific conditions. This will achieve burden reduction by allowing permit writers to determine, based on site-specific characteristics such as groundwater hydrology, local geological characteristics, and proximity to surface water and drinking water receptors, the most efficient placement of monitoring wells and to avoid monitoring for specific constituents that are not of concern or relevant to the site. These provisions should

⁵⁸ 80 Fed. Reg. at 21,398.

be added to 40 C.F.R. § 257.91, § 257.94, and § 257.95, respectively, in order to reduce unnecessary regulatory burdens.

D. Ability of Unlined CCR Surface Impoundments to Operate While Undertaking Corrective Action

Under the CCR Rule, an unlined surface impoundment that triggers corrective action—*i.e.*, detects a statistically significantly increase over an applicable groundwater protection standard—*must* cease the receipt of CCR within 6 months and commence closure with *no* opportunity to continue operation of the CCR unit by taking corrective action to remedy the release through engineering controls.⁵⁹ Importantly, though, EPA acknowledged “that it may be possible at certain sites to engineer an alternative to closure of the unit that would adequately control the source of contamination and would otherwise protect human health and the environment.”⁶⁰ Nonetheless, EPA declined to allow facilities to pursue this option, explaining that “the efficacy of those engineering solutions will necessarily be determined by individual site conditions” and “[a]s previously discussed, the regulatory structure under which this rule is issued effectively limits the Agency’s ability to develop the type of requirements that can be individually tailored to accommodate particular site conditions.”⁶¹

⁵⁹ 40 C.F.R. § 257.95(g)(5). Units that have triggered forced closure are provided an opportunity to continue operations for a limited period of time if there is no available disposal capacity for the CCR. *Id.* § 257.103.

⁶⁰ 80 Fed. Reg. at 21,371.

⁶¹ *Id.*

Again, with the enactment of legislation authorizing the implementation of the CCR Rule through enforceable state CCR permits that can be tailored to take into consideration individual site conditions, EPA's reasoning no longer exists for establishing a blanket prohibition on allowing unlined surface impoundments that have triggered corrective action to employ engineering controls to address the source and continue operating in a manner that protects human health and the environment. EPA should amend the Rule to explicitly grant state permitting programs the authority to allow unlined surface impoundments undertaking corrective action to demonstrate that such units can continue to operate during corrective action in a manner that is protective of human health and the environment. This option should be added to 40 C.F.R. § 257.101(a)(1) in order to reduce unnecessary regulatory burdens.

E. Adjustments to Post-Closure Care Period

The 2010 proposal included a provision that would have allowed facilities to conduct post-closure care for less than 30 years if the owner/operator was able to demonstrate that the reduced period was sufficient to protect human health and the environment.⁶² This option for a reduced post-closure care time period is available under both EPA's MSWLF and Subtitle C hazardous waste programs.⁶³ EPA

⁶² 75 Fed. Reg. at 35,253 (proposed 40 C.F.R. § 257.101(b)(1)).

⁶³ See 40 C.F.R. §§ 258.61(b)(1), 264.117(a)(2)(i).

removed this option from the Final Rule, however, “due to the lack of guaranteed state oversight for this rule.”⁶⁴

But now that the states and EPA can issue individual permits based on site-specific characteristics, this concern no longer exists. Therefore, EPA should revise the Rule to include a provision allowing for a determination that a decreased period of post-closure care, as opposed to the mandatory 30-year period, is sufficient to protect human health and the environment. This provision should be added to 40 C.F.R. § 257.104(c) to reduce unnecessary regulatory burdens.

F. Repeal The Rule’s Regulation of Inactive Surface Impoundments

For the first time in its 35-year implementation of the RCRA program, EPA made the unprecedented decision in the CCR Rule to regulate “inactive units”—that is, impoundments that had ceased receiving CCR before the effective date of the CCR Rule.⁶⁵ EPA does *not* regulate “inactive” units under its Subtitle C hazardous waste program but rather relies on its statutory “imminent and substantial endangerment” authorities under RCRA and CERCLA to address any potential risks from inactive hazardous waste surface impoundments.

EPA’s asserted regulatory jurisdiction over inactive CCR surface impoundments is not authorized by law. As discussed in more detail below in

⁶⁴ 74 Fed. Reg. at 21,426.

⁶⁵ The regulation of inactive surface impoundments has been challenged by the industry petitioners in the CCR Litigation.

USWAG's request for EPA to seek to hold the CCR Litigation in abeyance, RCRA is written in the present tense and its regulatory scheme is organized in a way that contemplates coverage of only those facilities that continue to operate and receive waste after the effective date of the applicable regulations. But even if some question remains on this jurisdictional issue (which USWAG believes that it does not for the reasons discussed below), the regulation of inactive CCR surface impoundments is clearly not mandated by the statute, but rather was a policy decision by the former EPA administration.

USWAG believes that EPA's policy decision to regulate inactive surface impoundments was misguided and consequently has many counterproductive and burdensome consequences without a corresponding environmental benefit. This provision is imposing hundreds of millions of dollars of inflexible, one-size-fits-all remediation costs on the power industry, overriding state risk-based cleanup programs. It is also one of the reasons why the Rule's costs far exceed its benefits. Therefore, EPA should repeal the provisions at 40 C.F.R. §§ 257.50(c) and 257.100 subjecting inactive surface impoundments to regulation under the Rule. EPA and the states can address any remaining risks from these inactive units in a more cost-effective manner under RCRA's imminent and substantial

endangerment provision (and EPA also can do so under CERCLA’s imminent and substantial endangerment provision).⁶⁶

G. Clarification on Using the “Closure-in-Place” Option

The CCR Rule authorizes owners or operators of CCR surface impoundments to close their impoundments by either (1) leaving the CCR in place after dewatering and/or stabilizing the wastes sufficient to support a final cover system and conducting 30 years of post-closure groundwater monitoring (referred to as “closure-in-place”) or (2) removing the CCR and decontaminating the CCR unit and releases from the unit (referred to as “closure-by-removal”).⁶⁷

Impoundments that undergo closure-by-removal are exempt from undertaking post-closure care.

Importantly, the Rule does not mandate the use of the closure-by-removal option in any particular set of circumstances, but, rather, leaves to the owner or operator the choice of using either closure option. Indeed, EPA has made it clear that if the relevant performance standard is met, both closure options are equally protective. Because the costs of closure-by-removal (commonly referred to by EPA as “clean closure”) can be far greater than closure-in-place, however, the Agency correctly expects most facilities to close CCR surface impoundments under the closure-in-place option. EPA stated in the Final Rule that “most

⁶⁶ 42 U.S.C. § 9606(a).

⁶⁷ 40 C.F.R. § 257.102.

facilities will likely *not* clean close their CCR units given the expense and difficulty of such an operation.”⁶⁸

Thus, nothing in the plain text of the CCR Rule requires a particular closure option to be employed in any particular set of circumstances. In fact, EPA explicitly states that it “did not propose to require clean closure *nor to establish restrictions on the situations in which clean closure would be appropriate.*”⁶⁹

Nonetheless, certain environmental interest groups contend that the closure-by-removal option *must* be selected in circumstances where CCR is in contact with the groundwater, and that the Rule’s equally protective and less costly closure-in-place option cannot be used in these circumstances. Indeed, an environmental organization recently filed a Notice of Intent (“NOI”) to bring a RCRA citizen suit against a USWAG member based solely on the facility’s closure plan, which indicates the facility intends to close an impoundment under the closure-in-place option where CCR allegedly is in contact with groundwater.⁷⁰

Although the CCR regulations are explicitly clear that an owner or operator can choose which closure option is appropriate for its particular units, environmental organizations are seizing upon a recent EPA guidance document referencing, as an example, the use of “clean closure” in circumstances when CCR

⁶⁸ 80 Fed. Reg. at 21,412 (emphasis added).

⁶⁹ *Id.* (emphasis added).

⁷⁰ See April 11, 2017 RCRA NOI from the Southern Environmental Law Center to EPA, the North Carolina Department of Environmental Quality, and Duke Energy.

is in contact with the groundwater as somehow suggesting that the Agency’s position is that closure-by-removal is *mandated* under these circumstances.⁷¹ This position is flatly at the odds with the plain language of the Rule and would impose staggering and unnecessary costs on the power industry to close CCR surface impoundments under the Rule. Indeed, the closure-in-place option specifically contemplates that CCR will remain in the unit and that any potential releases from the unit following closure—including releases from CCR in contact with groundwater—will be addressed, as necessary, through the Rule’s post-closure care groundwater monitoring and corrective action requirements.

To eliminate any possible confusion regarding EPA’s position on this critically important issue, and to eliminate the inappropriate reliance on EPA’s example by environmental organizations seeking to increase unnecessarily and dramatically the costs of closing CCR surface impoundments, USWAG requests that EPA clarify its recent guidance addressing this matter. In particular, the Agency should make it clear that either of the Rule’s closure options, including the closure-in-place option, can be employed to close a CCR surface impoundment where CCR may be in contact with groundwater.

⁷¹ See Relationship Between the Resource Conservation Act’s Coal Combustion Residuals Rule and the Clean Water Act’s National Pollutant Discharge System Permit Requirements, Closure Requirements, available at <https://www.epa.gov/coalash/relationship-between-resource-conservation-and-recovery-acts-coal-combustion-residuals-rule#Closure>.

Such a clarification is appropriate under all of the Administration’s Executive Orders on regulatory reform. Moreover, it is specifically called for under EO 13783, under which EPA is directed to review and modify, among other things, “guidance” that potentially burdens the development or use of domestically produced energy resources, including in particular on coal resources.⁷²

H. Confirming Beneficial Use of CCR to Close CCR Units

The CCR Rule does not apply to the “beneficial use of CCR,” as such term is defined in the CCR Rule.⁷³ This is because EPA concluded that such practices do not pose the type of risk that warrant regulation under the Rule.⁷⁴ With one limited exception, the Rule does not prohibit any specific activities from qualifying as a beneficial use of CCR—including the beneficial use of CCR for purposes of closing a CCR unit.

As a result, owners/operators of CCR units clearly are authorized to use CCR for a number of purposes during the process of closing a CCR unit, including waste stabilization, structural fill, and grading or contouring the slope for the final cover system. There is nothing unique about any of these practices that would prevent them from meeting the Rule’s beneficial use conditions. Such practices are environmentally beneficial, as they conserve the use of natural resources (such

⁷² EO 13783 § 1(c)

⁷³ 40 C.F.R. § 257.53.

⁷⁴ 80 Fed. Reg. at 21,327.

as soil) that would otherwise have to be utilized for closure. And in fact, the Rule's preamble specifically identifies structural fill and waste stabilization/solidification as potential beneficial uses.⁷⁵

Nonetheless, subsequent to the promulgation of the CCR Rule, EPA has been ambiguous regarding the appropriateness of beneficially using CCR for closing CCR units. There should be no ambiguity with respect to the environmentally sound and cost-effective use of CCR in lieu of virgin materials for the closure of CCR units. Therefore, EPA should eliminate any ambiguity and confirm that the exclusion for CCR beneficial use includes beneficially using CCR to close CCR landfills and surface impoundments.⁷⁶

I. CCR Beneficial Use at Clay Mine Sites

As explained above, the regulatory text of the CCR Rule places no limitations on what activities can constitute beneficial use, with the only exception being the placement of CCR in a “sand and gravel pit or quarry.”⁷⁷ The phrase “sand and gravel pit or quarry,” in turn, is defined as “an excavation for the extraction of aggregate, minerals or metals.”⁷⁸ Based on this language, EPA has taken a position prohibiting the environmentally sound and beneficial practice of

⁷⁵ See *id.* at 21,353.

⁷⁶ This clarification should also make clear that that beneficially using CCR to close units not regulated under the rule (i.e., inactive landfills) does not cause those units to become subject to regulation.

⁷⁷ See 40 C.F.R. § 257.53 (definition of “Beneficial use of CCR”).

⁷⁸ *Id.* (definition of “Sand and gravel pit or quarry”).

using CCR to reclaim clay mines on the grounds that the placement of CCR in a clay mine cannot be a beneficial use, irrespective of purpose or function, because a clay mine is or was a site used for the extraction of minerals—*i.e.*, clay.⁷⁹

This interpretation is needlessly prohibiting a cost-effective and environmentally sound CCR beneficial use practice and is imposing unnecessary disposal costs on CCR when the CCR can otherwise be beneficially used to reclaim clay mines in lieu of using virgin materials. EPA itself recognizes that clay is an adequate “liner” for preventing the migration of CCR contaminants.⁸⁰ EPA should therefore clarify in the CCR regulations that the definition of “sand and gravel pit or quarry” does not include clay mines and thereby provide owners/operators of such sites with the opportunity, as is the case with other CCR beneficial use structural fill activities, to demonstrate that the use of CCR to reclaim such sites meets the CCR Rule’s beneficial use criteria.

⁷⁹ EPA listed the Brickhaven No. 2 Mine Tract A, a former clay mine being reclaimed with CCR, on its initial draft open dump inventory. The site was subsequently removed from the final open dump inventory because the owner/operator posted a CCR Rule-compliant public website and fugitive dust control plan. See EPA Finalized Initial Open Dump Inventory as of January 12, 2017, available at <https://www.epa.gov/coalash/compliance-data-and-information-websites-required-disposal-coal-combustion-residuals-ccr>.

⁸⁰ Existing CCR surface impoundments are considered “lined” if constructed with a minimum of two feet compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. See 40 C.F.R. § 257.71(a)(1)(i).

J. State-Approved Liner Systems

In promulgating the CCR Rule, EPA established prescriptive liner design criteria that unfortunately failed to include liner systems for CCR units that state regulatory bodies have found to protect adequately human health and the environment.⁸¹ This means, for example, some CCR units that are considered to be “lined” under applicable state CCR requirements are nonetheless classified as “unlined” under the CCR rule. This subjects those CCR units to extremely burdensome requirements not imposed on lined units, including, in some circumstances, mandatory closure requirements.⁸²

Given that the WIIN Act now allows the CCR Rule to be implemented through enforceable state permit programs, this disregard for acceptable state liner requirements is at odds with the Administration’s principles of federalism and imposes unnecessarily burdensome requirements on CCR units. Therefore, EPA should modify the Rule at 40 C.F.R. § 257.71 to allow for a determination that a CCR unit with an existing state-approved or -accepted liner system qualifies as a lined CCR unit under the Rule.

⁸¹ 80 Fed. Reg. at 21,370 (noting that the state of Florida’s criteria for a liner system does not qualify as a “liner” under the federal CCR Rule).

⁸² See *id.* at 21,371.

K. Correction to Definition of Beneficial Use

In promulgating the definition of “beneficial use” at 40 C.F.R. § 257.53, a clear mathematical error was made in calculating the volume of CCR that triggers the need to make an environmental safety demonstration when using CCR in an unencapsulated manner.⁸³ Although the rulemaking record shows that the volume threshold triggering this requirement should have been 75,000 tons, EPA mistakenly calculated the number to be 12,400 tons.⁸⁴ The Agency’s failure to correct this figure, despite its awareness of the error, unnecessarily burdens power companies attempting to beneficially use CCR. EPA should therefore amend the definition of “beneficial use of CCR” at 40 C.F.R. § 257.53 such that the fourth condition applies only to unencapsulated uses exceeding 75,000 tons of CCR.⁸⁵

REQUEST TO HOLD CCR LITIGATION IN ABEYANCE

As explained above, given that certain of the provisions of the Rule identified in this Petition for reconsideration are the subject of ongoing litigation,⁸⁶

⁸³ When unencapsulated use of CCR involves placement on the land of 12,400 tons or more in non-roadway applications, the user must demonstrate that environmental releases to groundwater, surface water, soil and air are comparable to or lower than those from analogous products made without CCR, or that environmental releases to groundwater, surface water, soil and air will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use. 40 C.F.R. § 257.53 (definition of “Beneficial use of CCR”).

⁸⁴ See April 1, 2015 Letter from Headwaters Resources, Inc. to EPA, Docket No. EPA-HQ-RCRA-2009-0640-12147 (identifying an error in the calculation of the “smallest size landfill,” which was EPA’s basis for the 12,400 ton volume limitation).

⁸⁵ The 12,400 ton limitation has been challenged by industry petitioners in the CCR Litigation.

⁸⁶ *Utility Solid Waste Activities Group, et al. v. EPA, et al.*, No. 15-1219.

it is appropriate for EPA to seek to hold the case in abeyance while the Agency reconsiders and/or modifies its positions in the litigation. If the Agency ultimately modifies its positions with regard to the challenges raised by industry petitioners, industry petitioners would support a voluntary remand of those issues to the Agency.

In particular, five industry petitioners, including USWAG, and eight environmental group petitioners have challenged certain portions of the Final Rule in the United States Court of Appeals for the District of Columbia Circuit. Industry petitioners have argued that elements of the Rule exceed EPA's statutory authority, were promulgated without notice and comment, and/or are arbitrary and capricious, while environmental petitioners argue that elements of the Rule are too lenient and are arbitrary and capricious. All the petitions have been consolidated and briefing is complete, but the Court has not yet set a date for oral argument.⁸⁷

For all the reasons identified in this Petition, it is appropriate for EPA to seek to hold the case in abeyance.⁸⁸ This would allow EPA to reconsider its

⁸⁷ EPA entered into a settlement agreement with USWAG and environmental petitioners agreeing to a remand on certain aspects of their respective challenges to the Rule. The settlement requires EPA to engage in a new round of rulemaking that will require EPA to undergo notice-and-comment rulemaking to potentially revise the CCR Rule on certain key issues, including (1) clarifying the degree to which non-groundwater releases are subject to the Rule's corrective action provisions; (2) develop vegetative cover requirements for CCR units; (3) evaluate and undertake a rulemaking as appropriate to include the consideration of non-CCR wastewaters in the Rule's alternative closure provision; and (4) whether to add boron to the Rule's list of Appendix IV constituents.

⁸⁸ The other industry petitioners in the CCR litigation have represented to USWAG that they agree with this position.

position on these issues in light of the WIIN Act and the President's Regulatory Reform Executive Orders and modify such positions to the extent permitted by law and supported by a reasoned explanation.⁸⁹

The Agency has recently taken similar action to hold in abeyance pending litigation involving the prior EPA Administration's position on regulations impacting the power and other industry sectors.⁹⁰ For example, the Agency recently filed a motion to hold in abeyance litigation challenging an EPA rule involving the regulation of hazardous air pollutants from coal- and oil-fired electric utility power plants⁹¹ to allow the new Administration time to reassess its position on the Rule in light of EO 13783.⁹² In filing this motion, EPA specifically referenced its obligation under EO 13783 to review for possible

⁸⁹ See *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009); *Motor Vehicle Mfrs. Ass'n of the U.S., Inc., et al. v. State Farm Mut. Auto. Ins. Co., et al.*, 463 U.S. 29, 42 (1983).

⁹⁰ See e.g., "Respondent EPA's Motion to Continue Oral Argument," in *Walter Coke, Inc., et al., v. EPA*, No. 15-1166 (D.C. Cir.); see also Notice of Executive Order and Motion to Hold Case in Abeyance, *American Petroleum Institute, et al. v. EPA*, No. 13-1108 (and consolidated cases) (D.C. Cir.) (citing *Nat'l Cable & Telecomm. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 981 (2005) ("EPA's interpretations of statutes it administers are not 'carved in stone' but must be evaluated 'on a continuing basis,' for example, 'in response to . . . a change in administrations.'"). See also *Nat'l Ass'n of Home Builders v. EPA*, 682 F.3d 1032, 1038, 1043 (D.C. Cir. 2012) (a revised rulemaking based "on a reevaluation of which policy would be better in light of the facts" is "well within an agency's discretion," and "[a] change in administration brought about by the people casting their votes is a perfectly reasonable basis for an executive agency's reappraisal of the costs and benefits of its programs and regulations.").

⁹¹ Supplemental Finding That It Is Appropriate and Necessary to Regulate Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units, 81 Fed. Reg. 24,420 (Apr. 25, 2017).

⁹² See Respondent EPA's Motion to Continue Oral Argument in *Murray Energy Corp., et al. v. EPA, et al.*, No. 16-1127 (and consolidated cases) (D.C. Cir.) (filed April 18, 2017).

reconsideration *any* rule that could “potentially burden the development and use of domestically produced energy resources, with particular attention to oil, natural gas, coal, and nuclear resources.”⁹³ The CCR Rule unquestionably falls within the category of a rule that could potentially burden the development and use of domestically produced coal, oil and natural gas resources and therefore warrants similar reconsideration by the Agency.

All of the issues raised by industry petitioners in their challenge to the CCR Rule warrant reevaluation and modification by the new Administration. One issue in particular, however, warrants reevaluation and repeal pursuant to the President’s Regulatory Reform policies: the Rule’s regulation of “inactive” CCR surface impoundments—*i.e.*, impoundments where facility owners/operators ceased placing CCR *before* the effective date of the Rule.⁹⁴ In some cases, a regulated “inactive” impoundment ceased receiving CCR *years* before the effective date of the Rule.

As explained above, the regulation of inactive disposal units under RCRA is unprecedented. EPA readily acknowledges that it does *not* regulate “inactive” units under its Subtitle C hazardous waste program or under its MSWLF program (40 C.F.R. Part 258).⁹⁵ Indeed, EPA expressly “acknowledged that [regulating

⁹³ *Id.*

⁹⁴ See 40 C.F.R. §§ 257.50(c), 257.100.

⁹⁵ 80 Fed. Reg. at 21,342.

inactive surface impoundments] represented a departure from the Agency's long-standing implementation of the [hazardous waste] regulatory program under subtitle C," and that "EPA has generally interpreted [RCRA] to require a permit only if a facility treats, stores, or actively disposes of the wastes after the effective date of its designation as a hazardous waste."⁹⁶

Despite this long standing practice of not regulating inactive units under RCRA, the prior EPA Administration nonetheless asserted that it was appropriate, for the first time, to exercise jurisdiction over inactive CCR surface impoundments under the CCR Rule because of EPA's allegation that the risks from inactive CCR surface impoundments are equivalent to the risks of active CCR surface impoundments.⁹⁷ Thus, EPA's asserted jurisdiction over inactive CCR surface impoundments in the CCR Rule is *not* mandated by the statute, but rather was solely a policy decision by the former EPA Administration.⁹⁸

But this policy decision is not authorized under RCRA. As detailed in USWAG's briefs, EPA is statutorily constrained under RCRA Subtitle D to regulate "sanitary landfills," which are defined as units for the "disposal" of solid waste. Under RCRA's statutory text, legislative history, and case law, the term "disposal" encompasses units that are presently receiving solid waste. Therefore,

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ *Id.*

the CCR Rule can only regulate those units that were receiving CCR as of the effective date of the Rule.

Instead, Congress gave EPA, states, and citizens specific authority to address any concerns with "past disposal" activities at inactive units under RCRA's imminent and substantial endangerment provisions.⁹⁹ These provisions have been utilized since RCRA's inception over 35 years ago to address potential concerns with inactive solid and hazardous waste units. EPA has never suggested that these pre-existing statutory provisions have been ineffective or somehow insufficient to address the risks from such units, including inactive CCR surface impoundments.

Instead of EPA utilizing its existing statutory authorities to address on a site-specific basis the potential risk posed by inactive CCR impoundments, the Rule subjects all of these units to a one-size-fits-all set of mandated remediation criteria with no ability to tailor any potential response to the unique features and potential risks of the unit. This is completely antithetical to EPA's historic practice of using its RCRA imminent hazard authorities to address these sites on a unit-specific basis, which provides for a more cost-effective and tailored response mechanism.

⁹⁹ See 42 U.S.C. § 6973(a) (authorizing EPA to address the "past or present disposal" of any solid waste, including CCR, that may present an imminent and substantial endangerment to health or the environment); see also *Id.* § 6972(a)(1)(b) (authorizing any person, including the states, to bring an action for "past or present" disposal of solid waste which may present an imminent and substantial endangerment to health or the environment).

This means the power industry is needlessly incurring hundreds of millions of dollars in costs in complying with inflexible, one-size-fits-all standards for units that may not pose a risk to human health and the environment. Where a specific inactive impoundment poses an unreasonable risk, this risk would be better addressed using the more cost-effective and targeted imminent and substantial endangerment provisions.

The regulation of inactive impoundments is therefore one of the key provisions in the Rule where the costs far exceed the benefits. Because this particular CCR provision is undeniably an undue burden on the development and use of domestic energy resources—at both coal-fired facilities *and* oil- and gas-fired facilities with inactive CCR surface impoundments—it is appropriate for reconsideration and rescission under the President’s Regulatory Reform orders, including EO 13777, 13771, and 13783.

Other issues challenged in the litigation as arbitrary and capricious also warrant reconsideration and modification by the new Administration, including, among others:

- i. CCR Storage: On-site storage of CCR destined for beneficial use is considered a regulated CCR landfill, even though the exact same storage activities are excluded from regulation if conducted off-site;
- ii. Beneficial Use Volume Threshold: the Rule imposes additional requirements on the beneficial use of CCR in amounts of more than 12,400 tons, even though EPA acknowledged that this volume limitation was based on a mathematical error;

- iii. Seismic Location Restriction: the Rule imposes an unreasonable short deadline for meeting the seismic location restriction. EPA also failed to provide an adequate basis for applying the seismic location restriction to expansions of existing CCR landfills;
- iv. Alternative Closure: the Rule imposes an absolute prohibition on considering cost or convenience in determining whether a unit can qualify for an extended closure schedule; and
- v. Risk-Based Compliance Alternatives: as explained above, the Rule fails to include any risk-based compliance alternatives.¹⁰⁰

For all the above reasons, EPA should seek to hold the litigation in abeyance while EPA reconsiders its position on the issues raised by industry petitioners in their challenge to the CCR Rule.

CONCLUSION

The CCR Rule affects both the utility and coal industries and also affects the large and small businesses that support and rely upon those industries. It is causing significant adverse impacts on coal-fired generation in this country due to the excessive costs of compliance—even EPA acknowledges the costs of the Rule outweigh its benefits. Those impacts are being, and will be, felt in communities around the country where those industries operate. Reconsideration will enable the Agency to take all of these impacts into account to the full extent

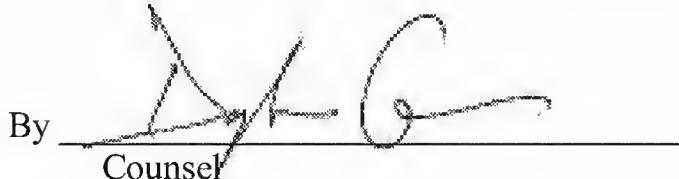
¹⁰⁰ Industry petitioners also are challenging elements of the Rule on grounds that EPA failed to provide adequate notice and comment, including (i) EPA's imposition of requirements on the beneficial use of CCR; (ii) the requirement for owners/operators of surface impoundments to certify compliance with specified dam safety factors not set forth in the proposed rule; and (iii) the requirement that the base of existing CCR surface impoundments be at least five feet above the uppermost aquifer underlying the impoundment.

allowed by law, as contemplated by recent Executive Orders and the changed statutory structure under which the Rule is to be implemented.

For all the foregoing reasons, EPA should grant this Petition, take action to extend the Rule's upcoming compliance deadlines, promptly undertake to initiate a new rulemaking to reflect the required changes identified in this Petition, and seek to hold the CCR Litigation in abeyance to allow the new EPA Administration to reassess its position in the litigation in light of this Petition, the WIIN Act, and the President's Executive Orders on regulatory reform.

Dated: May 12, 2017

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Appendix A

Use of Background Concentration as Groundwater Protection Standard for Appendix IV Constituents without Federal Maximum Contaminant Levels (MCLs)

Prepared for
Utility Solid Waste Activities Group
Ash Management Committee

May 2, 2017



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1 Introduction

In 2015, the Federal Coal Combustion Residual Rule (CCR) promulgated a new groundwater monitoring program for CCR disposal facilities. The program consists of a tiered system of monitoring requirements. Under the program, utilities are required to monitor a specific set of chemical constituents (commonly referred to as Appendix III constituents). If any Appendix III constituents are detected at statistically significant levels (SSLs) above background concentrations, then assessment monitoring is triggered. Under the assessment monitoring program, a different series of constituents (referred to as Appendix IV constituents) is monitored; the detection of any Appendix IV constituent at a statistically significant increased (SSI) concentration relative to its groundwater protection standard (GWPS) triggers groundwater corrective action and remediation to achieve the GWPS.

The CCR Rule stipulates that the relevant GWPS for each Appendix IV constituent is the federally established Maximum Contaminant Level (MCL); for constituents that do not have established MCLs, the site-specific background groundwater concentration is the relevant GWPS. The Appendix IV constituents without MCLs include cobalt, molybdenum, lithium and lead.

Using the background concentration as a GWPS for constituents without an MCL is problematic; such an approach causes constituents without MCLs to trigger corrective action disproportionately and requires more stringent clean-up requirements. In addition, such an approach runs antithetical to other US EPA's relevant regulatory programs in which protecting public health is based on the use of risk-based benchmarks.

This memo provides a regulatory and technical basis for why using background as a GWPS for constituents without an MCL is inconsistent with current US EPA regulatory policy, and causes excessive resource expenditure without providing any added public health benefit. Key conclusions include:

- The establishment of GWPS at background for Appendix IV constituents without MCLs is inconsistent with US EPA policy of establishing and using health-based remediation standards for RCRA cleanups.
- Requiring remediation for Appendix IV constituents without MCLs to background, when groundwater levels for these constituents are *below* established EPA health-based standards, results in excessively costly- and resource-intensive corrective action, without providing any public health benefit.
- Technologies employed to remediate arsenic, which is the key risk driver in the CCR rule, will generally also remediate the Appendix IV constituents without MCLs to their respective health-based levels. However, additional and more extensive treatment will be required for these Appendix IV constituents if their GWPS is background.
- Using background as the GWPS for Appendix IV constituents without MCLs, will result in scenarios where corrective action is triggered solely because the Appendix IV constituent is above background, but still below applicable health-based levels. This will result in a large expenditure of resources and costs without resulting in any added protection to human health.

2 Risk-based safety determinations and corrective action assessments are a cornerstone of US EPA regulatory programs

Using risk assessment to establish safe levels of exposures to chemicals in water, food, soil, and air is a central tenet of US federal and state regulatory agencies, including US EPA. In fact, US EPA provides leadership in risk assessment principles and implementation and has produced a multitude of guidance documents that put forth best risk assessment practices in general and under more specific environmental assessment conditions (*e.g.*, US EPA, 1989, 2007a, 2012a, 2016a). Many different programs at US EPA use these principles to establish concentrations of chemicals in environmental media that are protective of public health, including the Office of Water for establishing MCLs, the Office of Pesticides for determining safe levels of pesticides on plants and in soil, and the Office of Air for setting National Ambient Air Quality Standards, among many others. Moreover, as explained below, risk-based remedial actions are integral both to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), (*i.e.*, Superfund program) and the Resource Conservation and Recovery Act (RCRA) (Herman and Laws, 1996).

CCR disposal is currently regulated under the Resource Conservation and Recovery Act (RCRA). In its communication outreach, US EPA described the importance of risk assessment for RCRA and its key functions:

Risk information is an essential factor in determining which industrial wastes are judged to be hazardous wastes and should therefore be managed under the RCRA hazardous waste system. Risk assessment is also used in developing waste management programs for nonhazardous wastes. Risk information is used in targeting waste minimization efforts, issuing operating permits, determining the need for cleanup actions at permitted facilities, and setting cleanup goals. Risk assessment is also used in cost-benefit analysis for major rules and regulations and to chart strategic directions for the RCRA program (US EPA, 2001).

Of particular relevance to the CCR Rule are the risk-based policies and resources for the protection and remediation of impacted groundwater that US EPA has developed. Specifically, US EPA has established Regional Screening Levels (RSLs) to assess potential human health risks from chemicals in soil, water, and air. The RSLs are derived using conservative exposure assumptions and toxicity factors (which are also usually developed by US EPA) that represent a Reasonable Maximum Exposure (RME) scenario for long-term or chronic exposures (US EPA, 2016c). US EPA routinely updates these values to reflect the best available science. For the protection of groundwater, the RSLs consider all routes of exposure, including drinking water ingestion, dermal exposure during bathing, and inhalation exposures if the constituent is volatile. These values assist risk assessors with determining whether levels of constituents at a site may warrant further investigation or cleanup, or whether no further investigation is required (US EPA, 2016c).

If further investigation is warranted, more sophisticated risk evaluation approaches may be needed. Under the Superfund Program, US EPA has issued robust guidance over several decades for developing risk-based clean-up goals for groundwater that protect public health. Using this guidance in conjunction with US EPA policy, **it is important to appreciate that the majority of (if not all) site clean-ups/corrective actions**

involve cleaning up to a risk-based value, not background. In fact, background is usually set as a goal only if achieving the risk-based value is implausible because it falls below background (US EPA, 2002).

The specific explanation given in the CCR Rule for deviating from US EPA's risk-based approach and using background concentrations as cleanup goals instead of health-based groundwater benchmarks for Appendix IV constituents without MCLs is that "it was unlikely that a facility would have the scientific expertise necessary to conduct a risk assessment, and was too susceptible to potential abuse" (US EPA, 2015a). However, such a statement is not supportable, given how integral risk assessment is to RCRA regulatory programs and that US EPA RSLs are available for all of the Appendix IV constituents (see Table 3.1 for a summary of the RSLs and Section 3.4 for more discussion on lead health-based benchmarks). Even under a self-implementing program, these RSLs are readily available and can be used to conservatively determine if there is a potential risk that may warrant action.

3 Corrective actions to achieve background would require significantly more treatment with added cost without providing any health benefit

Aside from inconsistency with standard US EPA practice and policy, using background as clean-up goal will be excessively costly and resource-intensive, without providing any public health benefit. Using this approach, sites in corrective action may be required to remediate groundwater to levels that are many times lower than established health-based benchmarks (up to 100 times lower¹). Table 3.1 presents a comparison of the US EPA-developed RSLs for these constituents to the respective typical (median)² background concentrations in groundwater obtained from the US Geological Survey. As presented in Table 3.1, background concentrations of these constituents in groundwater are 7-100 times below the health-based benchmarks (*i.e.*, RSLs) developed by US EPA.

Table 3.1 Comparison of US EPA Health-based Criteria and Generic Background Levels

Constituent ^a	US EPA Tap Water RSL ^b ($\mu\text{g/L}$)	USGS Median GW Concentrations ^c ($\mu\text{g/L}$)	Fold Difference
Cobalt	6	0.17	35
Lithium	40	6	7
Molybdenum	100	1	100

Notes:

a) Lead was not included in this table. The US EPA Tap Water RSL for lead is not a health-based value, because US EPA has not established toxicity criteria (an RfD or CSF) with which to calculate screening criteria for lead, as they have for other constituents. While having some health basis, this value is based on the best treatment technology available to remove lead from drinking water, considering cost. Refer to Section 3.4 for more information on an appropriate health-based benchmark for lead.

b) US EPA, 2016d.

c) USGS, 2011.

CSF = Cancer Slope Factor; GW = Groundwater; HA = Health Advisory; HRL = Health Reference Level; RfD = Reference Dose; RSL = Regional Screening Level; US EPA = US Environmental Protection Agency; USGS = US Geological Survey.

The sections below provide a brief summary of each of the constituents highlighting the additional remediation that would be required to achieve background instead of the RSL. This information is summarized in Table 3.2. For this analysis, data from the Electric Power Research Institute (EPRI) Characterization of Field Leachates at Coal Combustion Product Management Sites (2006) was used to approximate field ash leachate concentrations (2006; Table 4-1). This data is based on a dataset consisting of 67 samples from surface impoundments and landfills and includes data collected from multiple sources including wells screened within CCR, drive point piezometers, seep samplers, core extracts, samples from leachate collection systems, and pond water samples collected from near the CCR-water interface, sluice lines, and impoundment outfalls. Because a significant portion of this dataset comes from impoundment

¹Not including lead, because the drinking water standard for lead is not health-based.

²Note that data from the USGS report were used to provide perspective on typical background concentrations cobalt, lithium, and molybdenum. Under the rule, site-specific background concentrations would need to be established to determine if corrective action was warranted.

water samples which likely contain lower CCR constituent concentrations than interstitial water samples from within the CCR, this dataset is likely biased low, and thus, conservative. Nonetheless, data presented in this report are consistent with data used by US EPA in the 2014 Final Human and Ecological Risk Assessment for Coal Combustion Residuals (US EPA, 2014). The median CCR constituent concentrations used in the analyses below are meant to approximate typical leachate concentrations that exist across CCR management units, but it should be noted that the data were generated from a sub-set of facilities and median estimates may change (up or down) given additional data.

3.1 Cobalt

Cobalt is an essential element, forming part of the B12 vitamin, and necessary for maintaining normal biological function. The recommended amount of daily B12 is about 6 µg (ATSDR, 2004). This dietary pathway is reported to be the largest source of cobalt exposure in the general population (ATSDR, 2004). Estimated intake rates range from 5-40 µg/day (0.07-0.57 µg/kg-day for a normal adult), and an average person consumes about 11 µg/day of cobalt from food (ATSDR, 2004). US EPA has developed a health-based RSL for cobalt of 6 µg/L. The cobalt RSL assumes that a 15-kg child will drink 0.78 L of water containing cobalt per day and bathe in water containing cobalt for 32 minutes each day (US EPA, 2016c).

As noted in Table 3.1, the median background concentration of cobalt in groundwater is 35 times lower than the RSL developed by US EPA. The median concentration of cobalt in CCR ash leachate (1 µg/L) is 6 times lower than the health-based cobalt RSL developed by US EPA. Thus, at the majority of CCR ash sites, no remediation would be required to achieve health-based benchmarks and protect human health. In contrast, in order to remediate median cobalt levels to background (*i.e.*, reduce levels from 1 µg/L to 0.17 µg/L), groundwater concentrations would need to be reduced by about 80% (about 6-fold).

3.2 Lithium

Lithium is a strategic metal that is naturally present at low concentrations in soil and water. Estimated dietary intake rates range from 0.24-1.5 µg/kg-day.³ The US EPA has developed a health-based RSL for lithium of 40 µg/L (US EPA, 2012b). The lithium RSL assumes that a 15-kg child will drink 0.78 L of water containing lithium per day and bathe in water containing lithium for 32 minutes each day (US EPA, 2016c).

As noted in Table 3.1, the median background concentration of lithium in groundwater is over 6 times lower than the health based value developed by US EPA. The median concentration of lithium in CCR ash leachate (129 µg/L) exceeds the health-based lithium RSL (40 µg/L) developed by US EPA. Thus, a 70% (3-fold) reduction in lithium concentrations would be required at CCR ash sites to achieve health-based benchmarks and protect human health. In contrast, in order to remediate median lithium levels to background groundwater concentrations (*i.e.*, reduce levels from 129 µg/L to 6 µg/L), the lithium concentrations would need to be reduced by about 95% (nearly 22-fold).

3.3 Molybdenum

Molybdenum is an essential element and is necessary for normal biological function. As an essential metal, the body is able to regulate molybdenum and limit its toxicity under higher than normal exposure conditions. In recognition of the essentiality of molybdenum, the Institute of Medicine (IOM) of the

³Although one source reports a significantly higher daily intake for lithium of 33-80 µg/kg-day for ingestion from food and municipal water (Moore, 1995, as cited in US EPA, 2008).

National Academies has developed an estimated average requirement (EAR) and recommended dietary allowance (RDA) for molybdenum. Based on studies that examined molybdenum excretion over a large dose range, IOM established an EAR of 34 µg/day for adults (IOM, 2001). Based on this analysis, IOM also established an RDA of 45 µg/day for adults (IOM, 2001). Although molybdenum is essential for certain biological functions, it is associated with specific toxic effects at high doses, which is true for all chemicals, including other essential elements. US EPA has developed an RSL of 100 µg/L (US EPA 2016d). The molybdenum RSL relies on the same assumptions articulated above for cobalt and lithium.

As noted in Table 3.1, the median background concentration of molybdenum in groundwater is 100 times lower than the health based value developed by US EPA. The median concentration of molybdenum in CCR ash leachate (405 µg/L) exceeds the health-based molybdenum RSL (100 µg/L) developed by US EPA. Thus, a 75% (4-fold) reduction in molybdenum concentrations would be required at CCR sites to achieve health-based benchmarks and protect human health. In contrast, in order to remediate median molybdenum levels to background groundwater concentrations (*i.e.*, reduce levels from 405 µg/L to 1 µg/L), the molybdenum concentrations would need to be reduced by about 99.8% (405-fold).

3.4 Lead

The regulation of lead in groundwater is unique. While there is some health basis for drinking water standard for lead, this value is also driven by a treatment technique requiring that water systems minimize exposure to lead in drinking water resulting from water corrosivity (US EPA, 2007b). The drinking water standard for lead is exceeded if the lead concentration in more than 10% of the tap water samples collected during the sampling period is greater than 15 µg/L. Thus, the drinking water standard for lead may not be suitable for selection as a cleanup value at CCR ash sites.

Instead, US EPA risk assessment methodology routinely relies on modeling to determine risk levels and appropriate cleanup values for lead. Specifically, the US EPA uses the Adult Lead Model (ALM) or child Integrated Exposure Uptake Biokinetic (IEUBK) Model (US EPA, 1994, 2003, 2010) as appropriate to develop acceptable lead levels in groundwater on a site-specific basis. These models calculate a level based on the probability of a child or a developing fetus having a blood lead level greater than 10 µg/dL.

While there is no readily available benchmark for lead remediation goals for CCR ash sites, and developing a site-specific value can be complex, it is noteworthy that the median concentration of lead in CCR ash leachate is generally low or not detectable (median = <0.20 µg/L) and thus corrective actions involving lead would be rare.

Table 3.2 Reduction to Achieve Health-based Values vs Background

Constituent	Median CCR Leachate Concentrations ^a (µg/L)	GWPS Option		Fold Reduction Needed		% Reduction Needed	
		US EPA Tap Water RSL ^b (µg/L)	USGS Background Groundwater Concentration ^c (µg/L)	Health-based	Background	Health-based	Background
Cobalt	1	6	0.17	NR	6	NR	83%
Molybdenum	405	100	1	4	405	75%	99.8%
Lithium	129	40	6	3	22	69%	95%
Lead	<0.20	15	0.07	NR	NR	NR	NR

Notes: CCR = Coal Combustion Residual Rule; GWPS = Groundwater Protection Standard; NR – No Reduction Needed; RSL = Regional Screening Level; USGS = United States Geological Survey.

Sources: a) EPRI, 2006; b) US EPA, 2016d; c) USGS, 2011.

4 Remediation of arsenic, which is likely key risk driver at most sites, will likely remediate lithium, molybdenum, and cobalt below risk-based levels

In general, the corrective action process and treatment technology design is a site-specific process that should be conducted based on site conditions. However, conventional technologies that remove arsenic, a key risk driver at many sites, may be able to partly remove other Appendix IV constituents including those without an established MCL, particularly if the level of treatment efficiency needed is in a similar range. For example, the Treatment Technology Summary for Critical Pollutants of Concern in Power Plant Wastewaters report by EPRI (2007) described a case study where a bioremediation technology was used for arsenic and selenium removal. The results showed that the treatment system also removed more than 90% of cobalt and molybdenum. Thus, if treating for arsenic, this level of treatment efficiency may be enough to meet the RSLs for the Appendix IV constituents without any additional cost. In contrast, if there is a large margin between the level of remediation required for arsenic compared to the other Appendix IV constituents without MCLs, it is likely that, based on the current CCR rule requirements, constituent-specific treatment systems in addition to conventional technologies used for arsenic treatment would be needed.

Table 4.1 demonstrates that if RSLs are used as the GWPS for constituents without MCLs, the level of remediation required to remove arsenic will be similar or greater than the level needed for molybdenum, lithium, and cobalt (2.5 fold decrease needed for arsenic vs 0-4.1 fold decrease needed for other constituents). Consequently, remediation technologies that target arsenic and partly remove other constituents will likely also be effective in reducing these constituents below the RSLs. In contrast, if background is used as the GWPS for constituents without MCLs, the level of remediation required between arsenic and other constituents is much more substantial (2.5-fold decrease needed for arsenic vs 5.9 to 405-fold decrease needed for other constituents), such that remediating for arsenic will be ineffective in reducing the other constituents to background and additional treatments will be required.

Table 4.1 Groundwater Corrective Action Treatment Efficiency Required to Achieve GWPS

Constituent	Fold Reduction Required (Ratio of Median Leachate Concentration to GWPS using RSLs for constituents without MCLs)
Arsenic	2.5 ^a
Antimony	--- ^b
Barium	--- ^b
Beryllium	--- ^b
Cadmium	--- ^b
Chromium	--- ^b
Mercury	--- ^b
Selenium	--- ^b
Thallium	--- ^b
Cobalt	--- ^b
Lithium	3.2
Molybdenum	4.1

Notes: GWPS = Groundwater Protection Standard; MCL = Maximum Containment Level; RSL = Regional Screening Level.

a) GWPS is based on the MCL.

b) For these constituents, the leachate concentration is already below GWPS

c) GWPS is based on typical groundwater background concentration (USGS, 2011).

5 Using health based-benchmarks for a subset of constituents and background for another subset will cause constituents without MCLs to disproportionately trigger correction action

The preceding sections provided information on the implications regarding the remediation of Appendix IV constituents if background is used as the GWPS. Another aspect of using background as the GWPS relates to an earlier step in the groundwater monitoring requirement—the triggering of assessment monitoring and subsequent corrective action. Although which and how many constituents trigger assessment monitoring will be site-specific, Table 5.1 provides perspective on how the GWPS (*i.e.*, background *vs* a health-based value) affects the proportion of samples that can trigger assessment monitoring and corrective action for specific key constituents. The present analysis is restricted to arsenic, which is likely to trigger a substantial number of assessment monitoring and corrective actions as well as the Appendix IV constituents without MCLs. It should be noted that the percentages listed in Table 5.1 are calculated using the same EPRI (2006) data described in Section 2 and are based on detectable samples only. The percentage of samples with constituents not detected in groundwater is also reported in the table.

As presented in Table 5.1, using background as the GWPS for Appendix IV constituents instead of a health-based value (*e.g.*, MCL) will increase the number of times assessment monitoring and subsequent corrective action is initiated. These values demonstrate how a scenario could occur where assessment monitoring and corrective action is completely driven by constituents that lack MCLs that are present above background but below health-based values. This translates into resource intensive groundwater remedies that provide no added protection to public health. As an example using EPRI (2006) leachate data to approximate utility-wide groundwater monitoring concentrations, one could expect molybdenum samples to trigger assessment monitoring and subsequent corrective action approximately 76% of the time if a health-based benchmark is used as the GWPS. In contrast, one could expect corrective action to be triggered over 95% of the time if background is used as the GWPS.

Although this analysis is based on a small data set and caution should be used to directly infer actions across facilities, these results suggest that increases in the number of samples that can trigger assessment monitoring and corrective action if background were used as the GWPS could be significant and result in an initiated corrective action at a substantial number of facilities. This would involve a large expenditure of resources and cost that would not result in any added protection to human health.

Table 5.1 Approximation of the Percentage of Samples that will Trigger Corrective Action under Different Potential GWPSs

	Percentage of Detections	Using Health-based Standard as GWPS for all Constituents	Using Background as GWPS for All Constituents without MCLs
Arsenic	100	70 ^a	70 ^a
Cobalt	68	38	94
Lithium	87	85	95
Molybdenum	>95	76	>95

Notes: GWPS = Groundwater Protection Standard; MCL = Maximum Containment Level.

a) GWPS for arsenic is the MCL under both scenarios.

6 The Water Infrastructure Improvements for the Nation Act (WIIN) Act creates a permitting program that can support the use of health-based benchmarks

When the 2015 CCR Rule was passed, enforcement authority was not assigned to the federal or state government (US Congress, 2016). This lack of direct oversight is one of the key reasons that US EPA opted to use background as the GWPS for constituents when an MCL was not available. As mentioned in Section 2, the 2015 CCR Rule stated that independent development of a health-based benchmark for constituents without MCLs "was determined to be inappropriate in a self-implementing rule, as it was unlikely that a facility would have the scientific expertise necessary to conduct a risk assessment, and was too susceptible to potential abuse" (US EPA, 2015b).

Since the passage of the 2015 CCR Rule, however, new legislation promulgated under the WIIN Act has amended the Federal CCR rule to allow for US EPA-approved state permitting programs. Such a process would allow for the development and regulatory approval of more site-specific health based benchmarks. The creating of state permits to oversee CCR Rule enforcement, which will include compliance with groundwater monitoring requirements, will be similar to other state-run permit programs that ensure facilities develop and meet appropriate risk based standards.

7 Conclusions

Using background concentrations as GWPSs for Appendix IV constituents without MCLs has far-reaching cost and resource allocation implications for CCR disposal facilities. The use of background concentrations as a GWPS for some constituents and MCLs for others results in disparate treatment of constituents and triggers costly corrective action remedies that will not provide any public health benefit. The available health-protective benchmarks for Appendix IV constituents (*i.e.* RSLs) and well-established US EPA risk assessment methodology for using or developing more site-specific benchmarks as a basis for GWPS, adequately provides for the long-term protection of human health.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2004. "Toxicological Profile for Cobalt." 486p., April.

Electric Power Research Institute (EPRI). 2006. "Characterization of Field Leachates at Coal Combustion Product Management Sites: Arsenic, Selenium, Chromium, and Mercury Speciation." Report to US Dept. of Energy (US DOE) EPRI 1012578. 192p.

Electric Power Research Institute (EPRI). 2007. "Treatment Technology Summary for Critical Pollutants of Concern in Power Plant Wastewaters." 1012549. 88p.

Herman, SA; Laws, EP. [US EPA, Office of Enforcement and Compliance Assurance; US EPA, Office of Solid Waste and Emergency Response (OSWER)]. 1996. Memorandum to RCRA/CERCLA National Policy Managers, Regions I-X re: Coordination between RCRA corrective action and closure and CERCLA site activities. 6p., September 24. Accessed on April 27, 2017 at <https://www.epa.gov/sites/production/files/2013-10/documents/racracorrection-mem.pdf>.

Institute of Medicine (IOM). 2001. Dietary reference intakes for vitamin A, vitamin K, arsenic, boron, chromium, copper, iodine, iron, manganese, molybdenum, nickel, silicon, vanadium, and zinc. Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board. National Academy Press, Washington, DC, 773p. Accessed at http://www.nal.usda.gov/fnic/DRI//DRI_Vitamin_A/full_report.pdf.

US Congress. 2016. "An Act to provide for improvements to the rivers and harbors of the United States, to provide for the conservation and development of water and related resources, and for other purposes [Water Infrastructure Improvements for the Nation Act]." S.612. 277p., January 4. Accessed on April 12, 2017 at <https://www.congress.gov/bill/114th-congress/senate-bill/612/text#toc-H91A0B3DCF1D14C6C92588DDAA897B03B>.

US EPA. 1989. "Risk Assessment Guidance for Superfund (RAGS). Volume I: Human Health Evaluation Manual (Part A) (Interim final)." Office of Emergency and Remedial Response, Washington, DC. NTIS PB90-155581; EPA-540/1-89-002. 287p., December.

US EPA. 1994. "Guidance manual for the Integrated Exposure Uptake Biokinetic Model for Lead in children." Technical Review Workgroup for Lead. Report to US EPA, Office of Emergency and Remedial Response, OERR Publication 9285.7-15-1, EPA 540-R-93-081, NTIS PB93-963510, 1994.

US EPA. 2001. "Risky Business? An Overview of Risk Assessment and RCRA." Office of Solid Waste and Emergency Response (OSWER), EPA530-F-00-032. 4p., February.

US EPA. 2003. "Recommendations of the Technical Review Workgroup for Lead for an approach to assessing risks associated with adult exposures to lead in soil." Technical Review Workgroup for Lead, Report to US EPA, Office of Solid Waste and Emergency Response/Office of Emergency and Remedial Response, EPA-540-R-03-001, OSWER Directive 9285.7-54, January.

US EPA. 2007a. "Framework for Metals Risk Assessment." Office of the Science Advisor. EPA 120/R-07/001. 172p., March. Accessed on March 08, 2011 at <http://www.epa.gov/raf/metalsframework/pdfs/metals-risk-assessment-final.pdf>.

US EPA. 2007b. "National primary drinking water regulations for lead and copper: Short term regulatory revisions and clarifications (Final rule)." *Fed. Reg.* 72(195):57782-57820. 40 CFR 141, 142, October 10.

US EPA. 2008. "Provisional Peer Reviewed Toxicity Values for lithium (CAS No. 7439-93-2)." National Center for Environmental Assessment (NCEA), Superfund Health Risk Technical Support Center, 31p., June 12.

US EPA. 2009. "Contaminant information sheets for the final CCL 3 chemicals." Office of Water, Office of Groundwater and Drinking Water, EPA 815-R-09-012, 216p., August.

US EPA. 2010. "Integrated Exposure Uptake Biokinetic Model For Lead in Children, Windows Version (IEUBKwin v.1.1 Build 11) - 32-Bit Version." February. Accessed on March 21, 2011 at <http://www.epa.gov/superfund/lead/products.htm#ieubk>.

US EPA. 2012a. "Framework for Human Health Risk Assessment to Inform Decision Making (EPA External Review Draft)." Risk Assessment Forum. EPA-601-D12-001. 85p., July 12. <http://epa.gov/raf/files/framework-document-7-13-12.pdf>.

US EPA. 2012b. "2012 edition of the Drinking Water Standards and Health Advisories." Office of Water, EPA 822-S-12-001, 20p., April.

US EPA. 2015a. "Hazardous and solid waste management system; Disposal of coal combustion residuals from electric utilities (Final rule)." *Federal Register*. 80(74), pp. 21302-21501, April 17. 40 CFR Parts 257 and 261.

US EPA. 2015b. "Hazardous and solid waste management system; Disposal of coal combustion residuals from electric utilities (Final rule)." *Fed. Reg.* 80(74):21302-21501. 40 CFR Parts 257 and 261. April 17.

US EPA. 2016a. "Methodology for Evaluating Beneficial Uses of Industrial Non-Hazardous Secondary Materials." Office of Land and Emergency Management, Office of Resource Conservation and Recovery EPA 530-R-16-011. 15p., April.

US EPA. 2016b. "Subpart E - Ground-water monitoring and corrective action: Assessment monitoring program." 40 CFR 258.55. 3p. Accessed on April 27, 2017 at <https://www.gpo.gov/fdsys/pkg/CFR-2016-title40-vol27/pdf/CFR-2016-title40-vol27-sec258-55.pdf>.

US EPA. 2016c. "Regional Screening Levels (RSLs) - user's guide." 124p., May. Accessed at <https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide-may-2016>.

US EPA. 2016d. "Regional Screening Level (RSL) tables (TR=1E-6, HQ=1) (composite tables)." 82p., May. Accessed at https://www.epa.gov/sites/production/files/2016-06/documents/composite_sl_table_run_may2016.pdf.

US Geological Survey (USGS). 2011. "Trace elements and radon in groundwater across the United States, 1992-2003." USGS Scientific Investigations Report 2011-5059, 131p. Accessed at https://pubs.usgs.gov/sir/2011/5059/pdf/sir2011-5059_report-covers_508.pdf.

Appointment

From: Kenely, Caroline [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=9B067E015E69442B8B5B8333CA36563F-KENELY, CAROLINE]
Sent: 4/12/2018 2:15:42 PM
To: jim.roewer@uswag.org; Johnson, Barnes [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=c39e9338cbf04dc3b4b29f78e5213303-Johnson, Barnes]; Hostage, Barbara [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=13c503d29e7a4eceb13c449d182eca25-BHostage]; Devlin, Betsy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b76a4bf5afc84459a6bf2a6a4645f40f-BDEVLIN]; Brooks, Becky [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=6f369a2ef33e4a87af349210a3915a57-BBrooks]; Hilosky, Nick [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=39e1182ac8cd4709ae0787ca4a068d2d-NHilosky]
CC: Roewer, James [JRoewer@eei.org]; Breen, Barry [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=1b44bce1a71e4a95acf82f2fb858b0-BBREEN]; Bridgeford, Tawny [TBridgeford@nma.org]; Kellogg, Dorothy A. [dorothy.kellogg@nreca.coop]; Stephen Fotis [scf@vnf.com]; Stanko, Joseph [jstanko@hunton.com]
Subject: Outside Guest CCR **Conference Lines / Ex. 6**
Location: 1301 Constitution Ave NW Room 3146 epaw
Start: 4/12/2018 2:15:00 PM
End: 4/12/2018 3:00:00 PM
Show Time As: Tentative

Security:

Please have the guards call OLEM's main number **202-566-0200** for an escort when you arrive.

POC: Becky Brooks – 566-2762
Teresa Hill – 566-0200 (scheduler)

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1301 Constitution Ave, NW
(On Constitution between 14th and 13th across from the National Museum of American History)

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Message

From: Roewer, James [JRoewer@eei.org]
Sent: 11/27/2017 1:19:22 PM
To: Fotouhi, David [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=febaf0d56aab43f8a9174b18218c1182-Fotouhi, Da]; Brown, Byron [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9242d85c7df343d287659f840d730e65-Brown, Byro]; Johnson, Barnes [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=c39e9338cbf04dc3b4b29f78e5213303-Johnson, Barnes]
CC: Doug Green [dhgreen@venable.com]; Fawal, Margaret K. [MKFawal@Venable.com]; HAROLD D. REGISTER JR <HAROLD.REGISTERJR@cmsenergy.com> (HAROLD.REGISTERJR@cmsenergy.com) [HAROLD.REGISTERJR@cmsenergy.com]
Subject: FW: Confirmation of CCR Rule Groundwater Monitoring
Attachments: CCRRuleGWMonitoring11272017.pdf

David,

Attached is a letter seeking confirmation regarding the timing of the groundwater monitoring program as established by EPA's CCR rule (40 CFR Part 257, Subpart D).

USWAG members are committed to complying with all environmental regulations, including the CCR rule. Therefore, clarification of the rule's requirements—including confirmation of USWAG's reading of the requirements specific to groundwater monitoring—is critical.

We appreciate your attention to this matter.

Thank you,

Jim Roewer

Jim Roewer
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November 27, 2017

Via Email

David Fatouhi
Deputy General Counsel
Environmental Protection Agency
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Washington, DC 20460
fatouhi.david@epa.gov

Mr. Fatouhi,

I am writing on behalf of the Utility Solid Waste Activities Group (USWAG) regarding implementation of the groundwater monitoring program in the Environmental Protection Agency's coal combustion residuals (CCR) rule (40 CFR Part 257, Subpart D). Specifically, I am seeking confirmation regarding the timing of certain requirements that must be taken under the CCR rule's groundwater monitoring provisions. USWAG members, and the industry in general, are committed to complying with all environmental regulations, including the CCR rule. Therefore, clarification of the rule's requirements—including confirmation of USWAG's reading of the requirements specific to groundwater monitoring—is critical.

The CCR rule's groundwater monitoring program utilizes a phased approach, which provides for a graduated response over time to groundwater contamination as the evidence of such contamination increases. Owners and operators of CCR units were required to initiate the first phase of the groundwater program, detection monitoring (40 C.F.R. § 257.94), by October 17, 2017. Depending on the results of the groundwater sampling and analysis and statistical evaluation in detection monitoring, the next phase of the groundwater program, assessment monitoring, could be triggered as soon as January 15, 2018.¹ Because of the significant implications of assessment monitoring (e.g., corrective action and/or forced closure

¹ Under § 257.98(h)(2), owners/operators have 90 days from sampling and analysis to run the statistical evaluation in detection monitoring. Because § 257.90(b)(1)(iv) requires an owner/operator to begin evaluating the data by October 17, 2017, the rule contemplates that the statistical evaluation will be completed by January 15, 2018.

of unlined surface impoundments), it is critical that EPA provide confirmation on the timing of each groundwater monitoring phase so that owners and operators can appropriately implement the rule's requirements going forward.

USWAG seeks confirmation with regard to its interpretation of the timing for two specific requirements in the CCR rule's groundwater monitoring program: (1) the timing to establish an assessment monitoring program if an owner/operator is unable to successfully make an alternate source demonstration in detection monitoring under § 257.94(e)(2); and (2) the timing for conducting a statistical evaluation on the data collected under the assessment monitoring program. USWAG's interpretation of the timing for each of these specific requirements, and the basis for that interpretation, is provided below. In addition, to help illustrate USWAG's interpretation, I have attached a diagram and two charts, outlining the timeframes in the rule's groundwater monitoring program.

1. Alternate Source Demonstration in Detection Monitoring

Under § 257.94(e)(1), if an owner/operator detects a statistically significant increase (SSI) above background levels for an appendix III constituent during detection monitoring, the owner/operator must within 90 days of detecting the SSI proceed to establish a groundwater assessment monitoring program meeting the requirements of § 257.95. However, § 257.94(e)(2) allows the owner/operator 90 days to demonstrate that the SSI was caused by a source other than the CCR unit or resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality (referred to here as an "alternate source demonstration"). If, at the end of that 90-day timeframe, the owner/operator is not able to successfully make this demonstration, the rule requires the owner/operator to "initiate an assessment monitoring program as required under § 257.95."

Under § 257.95(b), an owner/operator must within 90 days of "triggering" an assessment monitoring program, sample and analyze the groundwater for all appendix IV constituents. USWAG interprets the term "triggering" as occurring either: (1) if an owner/operator elects not to make an alternate source demonstration under § 257.94(e)(2), on the date an SSI is detected in a round of sampling taken under § 257.94(b); or (2) if an owner/operator tries but is unable to successfully make an alternate source demonstration under § 257.94(e)(2), at the end of the 90-day period in § 257.94(e)(2). In other words, the 90-day time period for conducting an alternate source demonstration in § 257.94(e)(2) is separate from, and does not run concurrently with, the 90-day time frame in § 257.94(e)(1) or § 257.95(b).²

² USWAG notes that this is in contrast to the 90-day time period for making an alternate source demonstration when an assessment of corrective measures is triggered in the assessment monitoring program (§ 257.95(g)(3)(ii)). EPA makes clear in the preamble to the rule, that—unlike the alternate

We would appreciate your confirmation that our understanding of the timing in § 257.94(e)(2) is correct.

2. Statistical Evaluation of Assessment Monitoring Data

Throughout the groundwater monitoring requirements, EPA distinguishes between the sampling and analysis of groundwater and the statistical evaluation of the data obtained through sampling and analysis. For example, under the detection monitoring program, the rule allows 90 days to complete the statistical evaluation after sampling and analysis is complete. See 40 C.F.R. § 257.93(h)(2). EPA explains in the preamble that it agreed with commenters that “90 days would be a reasonable amount of time to complete the statistical analysis to determine whether an exceedance had occurred.” 80 Fed. Reg. at 21403. See also 257.94(e)(2) (allowing the owner/operator to demonstrate that an SSI resulting from an error in *sampling, analysis, [or] statistical evaluation . . .*) (emphasis added).

In assessment monitoring, however, the rule does not specify a specific timeframe for completing the statistical evaluation of the data. Instead, under § 257.95(b), the owner/operator must *sample and analyze* the groundwater for all appendix IV constituents within 90 days of triggering an assessment monitoring program; and under § 257.95(d)(1), within 90 days of obtaining the results under § 257.95(b), the owner/operator must *resample and analyze* the groundwater for all appendix III constituents and those appendix IV constituents detected in § 257.95(b). The rule then jumps ahead, requiring the owner/operator to initiate an assessment of corrective measures within 90 days of detecting an appendix IV constituent at a statistically significant level above the groundwater protection standard (§ 257.95(g)(3)). Again, however, the rule does not specify a deadline for conducting the statistical evaluation for determining whether there is an exceedance of the groundwater protection standard.

USWAG believes that, at a minimum, owners/operators have 90 days to conduct the statistical evaluation following completion of the sampling and analysis in § 257.95(d)(1). This timeframe would be consistent with the 90-day time period provided for detection monitoring in § 257.93(h)(2), and with EPA’s explanation and reasoning in the preamble.

We would appreciate your confirmation that this interpretation of the timing for assessment monitoring is correct.

source demonstration timing in detection monitoring—the time period in § 257.95(g)(3)(ii) runs concurrently with the 90-day time period in § 257.96(a) for initiating an assessment of corrective measures. 80 Fed. Reg. 21302, 21406 (Apr. 17, 2015).

David Fatouhi
U.S. Environmental Protection Agency
Page 4 of 4

* * * *

Thank you in advance for your prompt attention to this matter. If you have any questions regarding the issues raised in this letter, please contact me at jim.roewer@uswag.org or (202) 508-5645.

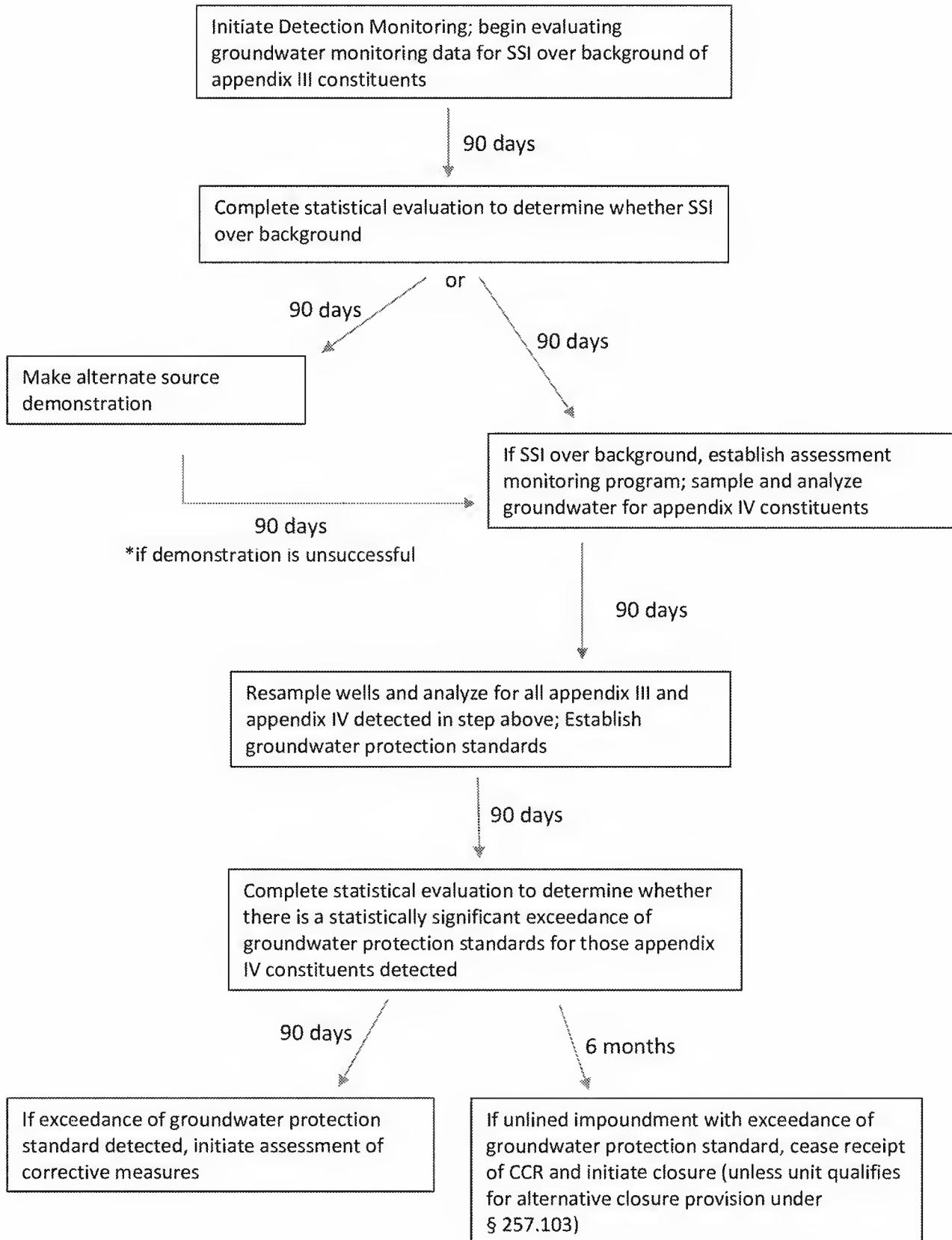
Sincerely,



James Roewer
USWAG Executive Director

cc: Byron Brown
 Barnes Johnson

Groundwater Monitoring Flow Chart



Timeline for Facilities That Elect to Make an Alternate Source Demonstration Under § 257.94(e)(2)			
Triggering Event	Action Required due to Triggering Event	Time Frame to Complete Action*	Regulatory Citation
Deadline for groundwater monitoring program	Install groundwater monitoring system, develop program, initiate detection monitoring and begin evaluating for statistically significant increase (SSI) over background.	October 17, 2017	§ 257.90(b) § 257.94(b)
Initiation of groundwater monitoring program	Complete statistical evaluation to determine if there is an SSI over background for Appendix III constituents.	90 days (January 15, 2018)	§ 257.93(h)(2)
SSI in detection monitoring	Demonstrate SSI was result of error or other source ("alternate source demonstration").	90 days (April 15, 2018)	§ 257.94(e)(2)
Failure to demonstrate SSI was result of error or other source under § 257.94(e)(2)	Establish assessment monitoring program; sample and analyze groundwater for appendix IV constituents.	90 days (July 14, 2018)	§ 257.95(b)
Results obtained from samples taken under § 257.95(b)	Resample all wells and conduct analyses for all Appendix III constituents and those Appendix IV constituents detected in the step above.	90 days (October 12, 2018)	§ 257.95(d)(1)
Results obtained from samples taken under § 257.95(d)(1)	Complete statistical evaluation to determine whether there is an exceedance of groundwater protection standards for appendix IV constituents detected.	90 days (January 10, 2019)	Unspecified; assume 90 days
Appendix IV constituent detected at statistically significant level above GPS in assessment monitoring	Initiate assessment of corrective measures or demonstrate that exceedance of GPS was error or caused by other source.	90 days (April 10, 2019)	§ 257.95(g)(3)
For unlined CCR impoundments, an Appendix IV constituent detected at statistically significant level above GPS in assessment monitoring	Cease receipt of CCR and initiate closure of impoundment (unless the unit qualifies for the rule's alternative closure provision under § 257.103).	6 months (July 10, 2019)	§ 257.95(g)(5); § 257.101(a)(1)

*Specific dates provided assume that there is an SSI over background in the first round of detection monitoring and an exceedance of a groundwater protection standard in the first round of assessment monitoring.

Timeline for Facilities That DO NOT Elect to Make an Alternate Source Demonstration Under § 257.94(e)(2)			
Triggering Event	Action Required due to Triggering Event	Time Frame to Complete Action*	Regulatory Citation
Deadline for groundwater monitoring program	Install groundwater monitoring system, develop program, initiate detection monitoring and begin evaluating for statistically significant increase (SSI) over background.	October 17, 2017	§ 257.90(b) § 257.94(b)
Initiation of groundwater monitoring program	Complete statistical evaluation to determine if there is SSI over background for Appendix III constituents.	90 days (January 15, 2018)	§ 257.93(h)(2)
SSI in detection monitoring	Establish assessment monitoring program; sample and analyze groundwater for appendix IV constituents.	90 days (April 15, 2018)	§ 257.95(b)
Results obtained from samples taken under § 257.95(b)	Resample all wells and conduct analyses for all Appendix III constituents and those Appendix IV constituents detected in the step above.	90 days (July 14, 2018)	§ 257.95(d)(1)
Results obtained from samples taken under § 257.95(d)(1)	Complete statistical evaluation to determine if there is an exceedance of groundwater protection standards for appendix IV constituents detected.	90 days (October 12, 2018)	Unspecified; assume 90 days
Appendix IV constituent detected at statistically significant level above GPS in assessment monitoring	Initiate assessment of corrective measures or demonstrate that exceedance of GPS was error or caused by other source.	90 days (January 10, 2019)	§ 257.95(g)(3)
For unlined CCR impoundments, an Appendix IV constituent detected at statistically significant level above GPS in assessment monitoring	Cease receipt of CCR and initiate closure of impoundment (unless unit qualifies for the rule's alternative closure provision under § 257.103).	6 months (April 12, 2019)	§ 257.95(g)(5); § 257.101(a)(1)

*Specific dates provided assume that there is an SSI over background in the first round of detection monitoring and an exceedance of a groundwater protection standard in the first round of assessment monitoring.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

JAN 26 2018

NOW THE
OFFICE OF LAND AND
EMERGENCY MANAGEMENT

Mr. James Roewer
c/o Edison Electric Institute
701 Pennsylvania Avenue, NW
Washington, D.C. 20004

Mr. Douglas Green
Ms. Margaret Fawal
Venable LLP
600 Massachusetts Avenue, NW
Washington, D.C. 20001

Re: Coal Combustion Residuals Rule Groundwater Monitoring Requirements

Dear Ms. Fawal, Mr. Green, and Mr. Roewer:

My office has been asked to respond to the letter from the Utility Solid Waste Activities Group (USWAG), dated November 27, 2017, to the U.S. Environmental Protection Agency (EPA), requesting confirmation with regard to your interpretation of the timing for two specific requirements in the Coal Combustion Residuals (CCR) Rule's groundwater monitoring provisions: (1) the timing to establish an assessment monitoring program if an owner/operator is unable to successfully make an alternate source demonstration in detection monitoring under 40 C.F.R. § 257.94(e)(2); and (2) the timing for conducting a statistical evaluation on the data collected under the assessment monitoring program. This responds in part to that November 27 letter.

I. Alternate Source Demonstration in Detection Monitoring

EPA agrees with your interpretation that the 90-day time period for conducting an alternate source demonstration in 40 C.F.R. § 257.94(e)(2) is separate from, and does not run concurrently with, the 90-day time frame in § 257.94(e)(1) or § 257.95(b).

40 C.F.R. § 257.94(e)(1) expressly provides that paragraph (e)(2) serves as an exception to the requirement that an owner or operator establish an assessment monitoring program within 90 days of detecting a statistically significant increase over background levels for any Appendix III constituent. ("Except as provided for in paragraph (e)(2) of this section,") Paragraph (e)(2) in turn provides that instead of initiating an assessment monitoring program within 90 days of such detection, the owner or operator may attempt to "demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase

resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.” The regulation further provides that, “[i]f a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with a detection monitoring program under this section.” If, at the end of that 90-day timeframe, the owner/operator is not able to successfully make this demonstration, the rule requires the owner/operator to “initiate an assessment monitoring program as required under § 257.95.”

Consistent with these provisions, EPA interprets 40 C.F.R. § 257.95(b) such that an assessment monitoring program is “triggered” either: (1) on the date an SSI is detected in a round of sampling taken under § 257.94(b) if an owner/operator elects not to make an alternate source demonstration under § 257.94(e)(2); or (2) at the end of the 90-day period in § 257.94(e)(2) if an owner/operator tries but cannot successfully make an alternate source demonstration under § 257.94(e)(2).

Note that this interpretation of the regulations mirrors the discussion of these provisions in the preamble to the final rule. As EPA explained,

The owner or operator has the opportunity to demonstrate that a source other than the CCR unit caused the statistically significant increase or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation or a natural variation in groundwater quality. Within 90 days, the owner or operator must prepare a report documenting this demonstration which must then be certified by a qualified professional engineer verifying the accuracy of the information in the report. If a successful demonstration is made within 90 days, the owner or operator may continue detection monitoring. If a successful demonstration is not made within 90 days, the owner or operator must initiate assessment monitoring.

Commenters raised concern that 90 days would not be sufficient to complete all of the activities necessary to determine whether the detection of an SSI was from another source than the CCR unit or was based on inaccurate results. The Agency recognizes that in some circumstances it could take more than 90 days to resample and have laboratories conduct new analyses, or to conduct field investigations to determine that another source is causing the contamination. As a result, § 257.94(e)(3) does not place an ultimate time limit for owners and operators to complete the demonstration. However, if after 90 days the owner or operator has not made a successful demonstration, (s)he must begin an assessment monitoring program.

80 Fed. Reg. 21,302, 21,404 (Apr. 17, 2015). *See also id.* at 21406 (contrasting the 90-day time period for making an alternate source demonstration pursuant to § 257.95(g)(3)(ii)).

2. Statistical Evaluation of Assessment Monitoring Data

USWAG also requested that EPA confirm your interpretation of the time frame for completing a statistical evaluation of the groundwater data collected during assessment monitoring in order to determine whether there is an exceedance of the groundwater protection standard. In your view, the regulations do not specify a specific timeframe for completing the statistical evaluation of these data. In support of this interpretation, you note that under § 257.95(b), the owner/operator must sample and analyze the groundwater for all appendix IV constituents within 90 days of triggering an assessment monitoring program; and that under § 257.95(d)(1), within 90 days of obtaining the results under § 257.95(b), the owner/operator must resample and analyze the groundwater for all appendix III constituents and those appendix IV constituents detected in § 257.95(b). The regulations then require the owner/operator to initiate an assessment of corrective measures within 90 days of detecting an appendix IV constituent at a

statistically significant level above the groundwater protection standard (40 C.F.R. § 257.95(g)(3)). On this basis, USWAG interprets the regulation to provide, at a minimum, that owners/operators have 90 days to conduct the statistical evaluation following completion of the sampling and analysis in § 257.95(d)(1).

EPA is still considering the issues you have raised regarding these provisions of the CCR Rule, and is therefore not in a position to provide a response at this time. I understand the need to provide timely guidance to facilities and will communicate EPA's views as soon as is feasible.

In the interim, if you have questions regarding this letter, please contact me at (703) 308-8895 or Frank Behan at (703) 308-8476.

Sincerely,



Barnes Johnson, Director
Office of Resource Conservation and Recovery

Appointment

From: Murphy, Tina [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=03E381B938CD4B279E8DA793984C33F1-MURPHY, TINA]
Sent: 3/14/2018 10:29:46 PM
To: Dunham, Sarah [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=a9444681441e4521ad92ae7d42919223-SDUNHAM]; Bond, Alexander [ABond@eei.org]; Adamantiades, Mikhail [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=dbbdce942f9e450cbba4d327e868bf20-MADAMANT]; Eholdsworth@eei.org; Hutson, Nick [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b7e6dc331d174798a3a269070576d896-Hutson, Nick]; Harvey, Reid [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=f8ec31caad5048db83f210032847de32-RHARVE02]; Culligan, Kevin [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=5ab7ef4a59614fd4b4485668c42818c7-KCULLIGA]; Tsirigotis, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d19c179f3ccb4fadb48e3ae85563f132-PTSIRIGO]
CC: Krieger, Jackie [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9b5c0c79be3c4821baf10ab9cf823e82-JKrieger]; Clarke, Deirdre [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=bd477de57edf406c8bdb6a175daa5062-Clarke, Dei]; Browne, Cynthia [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=82484ae2da274072aeb20d96500af484-Browne, Cynthia]; Fruh, Steve [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=f47a02a00d3642aea6de691e3015b188-SFRUH]; Swanson, Nicholas [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=3a03c53d255d4581acb3cb66f04e5df1-Swanson, Nicholas]; Fellner, Christian [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=5ec141f0ff134c0d823da60ff139fcbe-CFELLNER]; Lassiter, Penny [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=c3f6bf2e31d4492b9658b7c5c1583c09-PLASSITE]; Obenshain, Karen [KObenshain@eei.org]
BCC: DCRoomWJCS5041FGOAPDirTB/DC-OAR-OAP [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user788a1352]
Subject: ANPR Comment follow-up
Location: DCRoomWJCS5041FGOAPDirTB/DC-OAR-OAP, [Dial-in #; 202-991-0477, Conf.ID#:3483538]
Start: 3/22/2018 7:00:00 PM
End: 3/22/2018 8:00:00 PM
Show Time As: Busy

Added dial in numbers.

Appointment

From: Holdsworth, Eric [EHoldsworth@eei.org]
Sent: 3/19/2018 8:09:26 PM
To: Dunham, Sarah [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=a9444681441e4521ad92ae7d42919223-SDUNHAM]

Subject: Accepted: ANPR Comment follow-up
Location: DCRoomWJCS5041FGOAPDirTB/DC-OAR-OAP

Start: 3/22/2018 7:00:00 PM
End: 3/22/2018 8:00:00 PM
Show Time As: Busy

Recurrence: (none)

Appointment

From: Bond, Alexander [ABond@eei.org]
Sent: 3/19/2018 5:49:50 PM
To: Dunham, Sarah [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=a9444681441e4521ad92ae7d42919223-SDUNHAM]
Subject: Accepted: ANPR Comment follow-up
Location: DCRoomWJCS5041FGOAPDirTB/DC-OAR-OAP
Start: 3/22/2018 7:00:00 PM
End: 3/22/2018 8:00:00 PM
Show Time As: Busy

Recurrence: (none)

Message

From: Dunham, Sarah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A9444681441E4521AD92AE7D42919223-SDUNHAM]
Sent: 9/12/2017 6:12:56 PM
To: Banaga, Shannon M. [SMBanaga@tecoenergy.com]; Igoe, Sheila [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=13edc88d379b483fa1728a99e80153d4-SIGOE]; King, Melanie [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b9c6f7bdbbe740da89b63c967c89e75d-MKING04]
CC: Bond, Alex [ABond@eei.org]
Subject: RE: RICE Issues

Thanks Shannon-I've reached out to our enforcement office and they (with our support) are looking at this now.

From: Banaga, Shannon M. [mailto:SMBanaga@tecoenergy.com]
Sent: Tuesday, September 12, 2017 1:56 PM
To: Dunham, Sarah <Dunham.Sarah@epa.gov>; Igoe, Sheila <Igoe.Sheila@epa.gov>; King, Melanie <King.Melanie@epa.gov>
Cc: Bond, Alex <ABond@eei.org>
Subject: RE: RICE Issues

Thank you Alex.

Hello Sarah – it's been awhile since we last chatted but I hope all is well. I just got a rather distressing call from my Tampa Electric team. Publix reached out to us for aid in procuring diesel fuel for their generators, which our procurement folks are already trying to assist. If unsuccessful, Publix will look to run their generators (about 500 in the state) on natural gas. As I understand it, this may trigger RICE NESHAPS issues as a "modification". EPA has been extraordinarily helpful in no action letters and the like for Hurricane Irma issues – I'm hoping you all can provide guidance here.

Apologies if Publix has already reached out to you – we're all hands on deck as you may imagine.

Thank you,
Shannon

Shannon Maher Bañaga, Esq.
Director, Federal Affairs
TECO Energy Inc. – An Emera Company

1331 Pennsylvania Ave, N.W. Suite 510 North
Washington D.C., 20004
SMBanaga@tecoenergy.com
Office (202) 824-0414
Mobile Personal Phone / Ex. 6

From: Bond, Alex [mailto:ABond@eei.org]
Sent: Tuesday, September 12, 2017 1:12 PM
To: Dunham.sarah@Epa.gov; Banaga, Shannon M. <SMBanaga@tecoenergy.com>
Cc: igoe.sheila@epa.gov; king.melanie@epa.gov
Subject: RICE Issues

***** Don't be quick to click! We're counting on you! This email is from an external sender! Don't click links or open attachments from unknown sources. Forward suspicious emails as an attachment to phishing@tecoenergy.com for analysis by our cyber security team. *****

Sarah – hope all is well with you! I wanted to connect you with one of my members here, Shannon Banaga from TECO Energy, who is having some urgent RICE issues pop up just now that need attention from OAR. I'll let Shannon take it from here, but just wanted to put (hopefully) the right folks all on the same email chain.

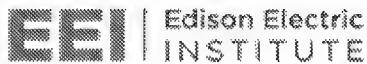
Thanks!

Alex

--

Alex Bond
Associate General Counsel, Energy & Environment
701 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2696
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Message

From: Bond, Alexander [ABond@eei.org]
Sent: 5/22/2018 5:32:52 PM
To: elaine.chao@dot.gov; Pruitt, Scott [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=757bedfd70ca4219b6d8046f5ce5681e-Pruitt, Sco]
CC: Wehrum, Bill [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=33d96ae800cf43a3911d94a7130b6c41-Wehrum, Wil]; Gunasekara, Mandy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=53d1a3caa8bb4ebab8a2d28ca59b6f45-Gunasekara,]; Bolen, Brittany [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=31e872a691114372b5a6a88482a66e48-Bolen, Brit]; Heidi.king@dot.gov; Doherty, Jane (NHTSA) [/jane.doherty@dot.gov]; Grundler, Christopher [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3be58c2cc8545d88cf74f3896d4460f-Grundler, Christopher]; chris.mitton@dot.gov; Jackson, Ryan [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=38bc8e18791a47d88a279db2fec8bd60-Jackson, Ry]
Subject: Corporate Average Fuel Economy (CAFE) and Greenhouse Gas (GHG) standards for light-duty vehicles
Attachments: JointCAFETailpipeLetter_Final.pdf

Dear Secretary Chao and Administrator Pruitt:

Please find a letter from the Edison Electric Institute (EEI), Alliance of Automobile Manufacturers (Alliance), American Public Power Association (APPA), Association of Global Automakers (Global Automakers), and National Rural Electric Cooperative Association (NRECA) requesting that the Agencies take comment in any upcoming proposal regarding Corporate Average Fuel Economy (CAFE) and Greenhouse Gas (GHG) standards for light-duty vehicles on the inclusion of a suite of flexibilities that focus on technology adoption and allow automakers and states to maximize the benefits of increased electric transportation.

Thank you!

--
Alex Bond
Associate General Counsel, Energy & Environment
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202-508-5523
www.eei.org

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May 22, 2018

The Honorable Elaine L. Chao
Secretary
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

The Honorable Scott Pruitt
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Secretary Chao and Administrator Pruitt:

The Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA) (collectively, the Agencies) have announced they will issue a joint Notice of Proposed Rulemaking (NPRM) that would request comment on a range of proposed Corporate Average Fuel Economy (CAFE) and Greenhouse Gas (GHG) standards for light-duty vehicles.

The Edison Electric Institute (EEI), Alliance of Automobile Manufacturers (Alliance), American Public Power Association (APPA), Association of Global Automakers (Global Automakers), and National Rural Electric Cooperative Association (NRECA) (collectively, the Associations) request that the Agencies take comment in any upcoming proposal on the inclusion of a suite of flexibilities that focus on technology adoption and allow automakers and states to maximize the benefits of increased electric transportation. We believe these flexibilities will further deployment of electric vehicles (EVs) and other advanced vehicles, provide GHG reductions, and maintain a single national program for fuel economy and GHG standards.

By creating American jobs, fueling innovation, promoting exports, and advancing mobility, automakers are driving the U.S. economy forward. Nationwide, more than 7 million workers and their families depend on the auto industry. Each year, the industry generates \$500 billion in paychecks, and accounts for \$205 billion in tax revenues across the country. Historically, the auto industry has contributed between 3 to 3.5 percent to America's total GDP. In fact, no other single industry is linked to so much of U.S. manufacturing or generates so much retail business and employment.

Driven by several factors—including customer demands, technology developments, and federal and state regulatory obligations—the electric power sector is undergoing a transition of its generating fleet that will continue over the next decade and beyond. Concurrent with this transition, electric companies are making significant investments to make the energy grid

smarter, cleaner, more dynamic, more flexible, and more secure in order to integrate and deliver a balanced mix of resources from both central and distributed energy resources to customers. Additionally, safe, reliable, affordable, and increasingly clean energy powers the economy, promotes national energy independence, and enhances the lives of all Americans.

The auto industry has invested billions of dollars on powertrain research and development and that investment is paying off—as automakers are providing customers with record-breaking choices for fuel-efficient vehicles. Today, more than 490 models are on sale that achieve at least 30 miles per gallon. EVs, in particular, play an important role in achieving energy and environment goals for each of our industries. Many of EEI’s, APPA’s, and NRECA’s members also are actively involved in the development of the regulations, financial incentives, and infrastructure for commercial deployment of EVs and plug-in hybrid EVs.¹

The regulatory environment is undoubtedly pushing toward electric transportation, both in the U.S. and around the world. At the federal level, increasing CAFE and GHG emission stringency requires an increasing shift toward EVs. There is also a global movement to adopt electric transportation targets—at least 10 other countries across Europe and in Asia have EV sales targets in place. California and several other states have also pushed to increase electrification as a method of addressing local energy and air quality challenges via the Zero Emission Vehicle (ZEV) program. Although EVs currently constitute only about one percent of all vehicles sold in the U.S., we believe that EVs can play an important part of the range of technologies and measures needed to reduce reliance on imported fuels, maintain a balanced energy mix, and reduce GHG and other emissions.

Consistent with comments filed by EEI, the Global Automakers, and Alliance on EPA’s Reconsideration of the Mid-Term Evaluation, we continue to support standards that provide important flexibilities and recognize the role of EVs as a compliance solution. Although EPA and NHTSA have yet to propose the joint NPRM about future fuel-efficiency standards, we continue to support increases in the stringency of fuel economy and GHG standards year-over-year that also incorporate policies from California and other ZEV states to ensure that “One National Program” is maintained.

As the Agencies consider potential changes to the standards, EPA should extend and improve the current regulatory mechanisms that provide critical support for EVs and advanced vehicles, including hybrid and fuel cell electric vehicles, for model year (MY) 2022-2025.² Increasing the

¹ EEI’s members are involved in a range of regulatory proceedings regarding EVs and their deployment. As of now, more than 30 EEI member companies have proposed or are implementing EV-related pilots and programs in more than 20 states. These programs represent more than \$2 billion worth of potential investment in EV infrastructure and deployment. More than 60 APPA members are implementing EV pilots and programs in 20 states. These pilots and programs represent approximately \$300 million of potential investment in EV infrastructure and deployment. Approximately 150 NRECA members provide off-peak charging rates for electric vehicle users and dozens of electric cooperatives across the country have programs that implement charging infrastructure in their service territory.

² This includes continuing to attribute zero GHG emissions to EVs and other alternative fuel vehicles through MY 2022-2025, and extending with an eye toward enhancing credit multipliers for those vehicles.

effectiveness of these flexibilities will further encourage manufacturers to continue investment in innovative technologies that have experienced broad market adoption headwinds. We believe these flexibilities will further EV commercialization and GHG reductions.

We believe that advanced technologies, such as EVs, can provide key flexibilities to automakers in a way that maintains a single national program for fuel economy and GHG standards. Further, the Agencies should consider reforming and improving the off-cycle credits process in a manner that allows manufacturers to efficiently access such credits.

Deployment of EVs and other advanced technologies will improve fleet average fuel economy and reduce dependence on imported petroleum. Increased EV deployment also will reduce emissions of GHGs and criteria pollutants from the transportation sector. As electric power sector emissions have decreased and are on a long-term trajectory toward further reductions, increased EV deployment also will decrease overall GHG and criteria pollutant emissions. As of 2017, the electric sector had reduced its GHG emissions by 27 percent from 2005 levels, and the continued deployment of natural gas-based and renewable generation will only further this trend.³ Additionally, between 1990 and 2016, emissions of nitrogen oxides were cut by 82 percent and sulfur dioxide by 91 percent—during a period in which electricity use grew by 36 percent. The resulting reductions in GHG and criteria pollutant emissions from electricity generation will allow increased EV deployment to create additional environmental benefits through utilization of lower emissions intensity electric sector power sources.⁴

The Associations request that the Agencies take comment in any upcoming proposal on the inclusion of a suite of flexibilities that focus on technology adoption and allow automakers and states to maximize the benefits of increased electric transportation.

Sincerely,

Edison Electric Institute
Alliance of Automobile Manufacturers
American Public Power Association
Association of Global Automakers
National Rural Electric Cooperative Association

³ See U.S. Energy Information Administration, *Monthly Energy Review*, September 2017, available at <https://www.eia.gov/totalenergy/data/monthly/pdf/mer.pdf>. Further, projections made in recent years in EIA's *Annual Energy Outlook* point toward continuing improvements in carbon dioxide intensity, resulting in even greater benefits from electric vehicles. See EIA *Annual Energy Outlook* 2017, available at [https://www.eia.gov/outlooks/aoe/pdf/0383\(2017\).pdf](https://www.eia.gov/outlooks/aoe/pdf/0383(2017).pdf).

⁴ See EPRI-NRDC, Environmental Assessment of a Full Electric Transportation Portfolio, <https://www.epri.com/#/pages/product/3002006881/>.

* * * * *

The Edison Electric Institute (EEI) is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for about 220 million Americans, and operate in all 50 states and the District of Columbia. As a whole, the electric power industry supports more than 7 million jobs in communities across the United States. In addition to our U.S. members, EEI has more than 60 international electric companies, with operations in more than 90 countries, as International Members, and hundreds of industry suppliers and related organizations as Associate Members.

The Alliance of Automobile Manufacturers (Alliance) is the leading advocacy group for the auto industry representing over 70 percent of new car and light trucks sales in the United States. The Alliance's diverse membership includes companies headquartered in the U.S., Europe and Asia—the BMW Group, FCA US, Ford Motor Company, General Motors Company, Jaguar Land Rover, Mazda, Mercedes-Benz USA, Mitsubishi Motors, Porsche, Toyota, Volkswagen Group of America, and Volvo Car Group.

The American Public Power Association (APPA) is the national service organization representing the interests of over 2,000 community-owned, not-for-profit electric utilities. These utilities include state public power agencies, municipal electric utilities, and special utility districts that provide low-cost, reliable electricity and other services to over 49 million Americans.

The Association of Global Automakers (Global Automakers) represents the U.S. operations of international motor vehicle manufacturers, original equipment suppliers, and other automotive-related trade associations. Global Automakers' members include American Honda Motor Co.; Aston Martin Lagonda of North America, Inc.; Ferrari North America, Inc.; Hyundai Motor America; Isuzu Motors America, Inc.; Kia Motors America, Inc.; Maserati North America, Inc.; McLaren Automotive Ltd.; Nissan North America Inc.; Subaru of America, Inc.; Suzuki Motor of America, Inc.; and Toyota Motor North America, Inc.

The National Rural Electric Cooperative Association (NRECA) is the national service organization for more than 900 not-for-profit electric utilities that provide electricity service to approximately 42 million consumers. NRECA members own and maintain 2.6 million miles, or 42 percent, of the nation's electric distribution lines and account for 11 percent of the total kilowatt-hours in the U.S. each year. With a commitment to contribute to the vitality and prosperity of the communities served by our members, electric cooperatives are dedicated to a healthy environment, building vibrant rural communities, and providing reliable and affordable electricity to our cooperative consumer.

Message

From: Kuhn, Thomas [TKuhn@eei.org]
Sent: 5/4/2017 11:33:51 PM
To: Pruitt, Scott [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=757bedfd70ca4219b6d8046f5ce5681e-Pruitt, Sco]
CC: Shea, Quin [QShea@eei.org]; Roewer, James [JRoewer@eei.org]
Subject: Federal Regulation of Coal Combustion Residuals (CCR)
Attachments: CCR Letter to EPA 5-3-17(LG Signed).pdf

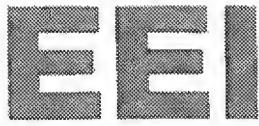
Administrator Pruitt: Attached is a letter from two of our key CEO environmental thought leaders addressing concerns with the regulation of coal combustion residuals (CCR).

The implementation of efficient, effective and environmentally protective management of CCR under the direction of state regulatory agencies, with support from EPA, is a critical issue for the industry, and we appreciate your attention to this issue.

Please contact me with any questions, or have your team contact Jim Roewer (jroewer@eei.org) or Quin Shea (qshea@eei.org) to follow-up on any CCR-related issues.

Tom Kuhn
President
Edison Electric Institute
202-508-5555
tkuhn@eei.org





**Edison Electric
INSTITUTE**

Power by Association

May 3, 2017

The Honorable Scott Pruitt
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N. W.
Washington, DC 20460

Dear Administrator Pruitt,

On behalf of the Edison Electric Institute's (EEI's) Board of Directors, we thank you again for your participation in EEI's March meeting. We support the goals you outlined to improve the federal environmental policy framework, including the emphasis on strengthening cooperative federalism and enhancing the states' role in implementing environmental programs. We look forward to continuing a constructive dialogue with you and your team on how to implement a smarter, more efficient system of environmental protection.

In this vein, we appreciate your ongoing attention to the implementation of federal regulations for coal combustion residuals (CCR) through EPA-approved state permit programs. On April 4, representatives from AEP, EEI and the Utility Solid Waste Activities Group met with Byron Brown and others to discuss implementation of the CCR-related provisions of the Water Infrastructure Improvements for the Nation Act.

That meeting was an important first step in a process that will improve the overall implementation of the federal regulation of CCR, reduce regulatory burdens, increase opportunities for environmentally protective compliance flexibility, and yield greater regulatory certainty for the industry and increased authority for state regulators. As discussed in that meeting, we encourage EPA to:

- Continue the process you have initiated to develop needed guidance for states regarding the review and approval process of state CCR permit programs;
- Expedite the review and approval of state CCR permit programs, including those containing site-specific flexibility and tailoring of regulatory requirements, a goal reflected in the pending FY 2017 appropriations bill;
- Revise the federal CCR rule to restore common-sense, risk-based management options that are as protective as the minimum national standards now that the rule will be implemented by state regulatory agencies; and
- Extend compliance dates in the CCR rule to provide time for the approval and implementation of state permit programs to avoid potentially significant expenditures for elements of the rule that may be modified and implemented differently by an approved state permit program.

Page 2

In addition to these steps, we encourage EPA to act swiftly to clarify critical technical aspects of the CCR rule. This can be done by 1) publishing corrections and clarifications on EPA's Q&A website and 2) proposing and finalizing the CCR Remand Rule as soon as possible. Both of these actions will provide necessary clarity on several key aspects of the rule.

These are critical issues for our industry, and we look forward to continuing to work with you and your team on them.

Please contact us or Tom Kuhn to discuss these issues further.

Sincerely,



Nicholas K. Akins
Chairman, President and CEO
American Electric Power
Immediate Past Chair, EEI


Lynn J. Good
Chairman, President and CEO
Duke Energy
Co-Chair, EEI Policy Committee on Environment

Message

From: Kuhn, Thomas [TKuhn@eei.org]
Sent: 8/3/2017 7:50:25 PM
To: Pruitt, Scott [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=757bedfd70ca4219b6d8046f5ce5681e-Pruitt, Sco]
CC: Jackson, Ryan [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=38bc8e18791a47d88a279db2fec8bd60-Jackson, Ry]; Dravis, Samantha [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ece53f0610054e669d9dff0b3a842df-Dravis, Sam]
Subject: New Study Reinforces Value of Electric Power Industry
Attachments: FINAL jobs study.pdf

As the electric power industry works alongside EPA to achieve our shared goals of promoting a healthy environment for future generations, EEI's member companies are providing tremendous value to our nation's economy and workforce. Attached please find a new report by M.J. Bradley & Associates (MJB&A), *Powering America: The Economic and Workforce Contributions of the U.S. Electric Power Industry*.

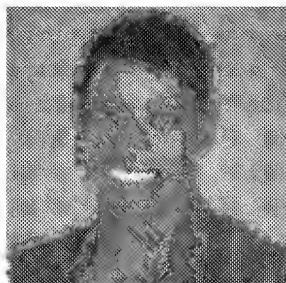
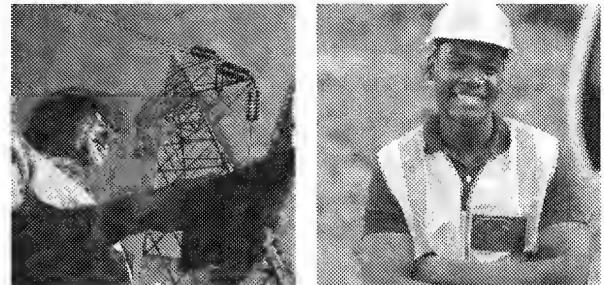
This economic analysis was conducted on behalf of EEI in partnership with American Public Power Association (APPA) and National Rural Electric Cooperative Association (NRECA). The report provides a detailed analysis of the role that electric companies—and their employees—play in the nation's labor force and economy. Importantly, the study takes a comprehensive look at the downstream impacts of jobs in the electric power industry.

Among the findings, the report shows that our industry supports more than 7 million American jobs—that is 1 out of every 20 jobs. As a whole, our industry contributes \$880 billion or 5 percent of total GDP. We think of this as the first 5 percent of the American economy because virtually every other sector of the economy depends, to a significant degree, on the safe, reliable, affordable, and increasingly clean energy delivered by the men and women of the electric power industry.

Understanding the industry's value, economic contributions, and changing nature is critical to policy decisions related to employment and economic growth. This report provides a foundation of knowledge and data to support policy decisions that create a strong economy and vibrant labor force.

Powering America

The Economic
And Workforce
Contributions
Of The U.S. Electric
Power Industry



MJB & A

M.J. Bradley & Associates, LLC

About M.J. Bradley & Associates

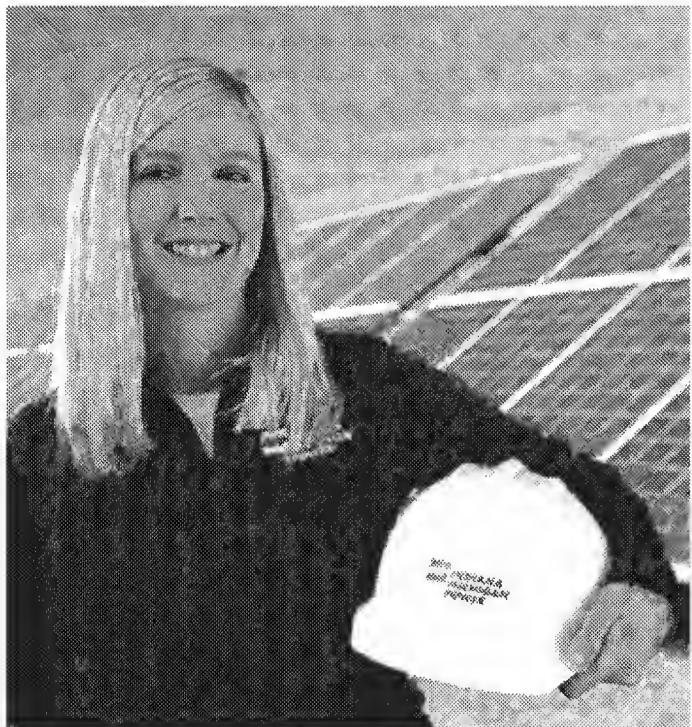
M.J. Bradley & Associates, LLC (MJB&A), founded in 1994, is a strategic consulting firm focused on energy and environmental issues. The firm includes a multi-disciplinary team of experts with backgrounds in economics, law, engineering, and policy. The company works with private companies, public agencies, and non-profit organizations to understand and evaluate environmental regulations and policy, facilitate multi-stakeholder initiatives, shape business strategies, and deploy clean energy technologies.

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Employee photos courtesy of: American Electric Power, Arizona Public Service, Blue Ridge Energy, Bryan Texas Utilities, Dominion Energy, Georgia Power, Great River Energy, Kissimmee Utility Authority, NorthWestern Energy, and Southside Electric Cooperative.

Summary of Key Findings & Results

MEET THE FUTURE OF ENERGY



Her name is Jennifer Watters. Watters is a generation project manager who oversees major projects at American Electric Power's (AEP's) power plants, including the most recent construction of universal, or large-scale, solar power plants for Indiana Michigan Power Company (I&M). I&M is an operating unit of AEP, an electric company based in Columbus, Ohio. AEP employs about 17,600 workers, supplies electricity to 5.4 million customers in 11 states, and maintains more than 40,000 miles of transmission lines. The company's jobs range from engineer to lineworker, from truck driver to meteorologist, from customer service rep to computer programmer.

Watters' job is not unique to I&M and AEP. In fact, it is just one example of the many high-quality jobs available in the electric power industry—an industry that creates a solid, stable employment base in all 50 states and the District of Columbia, and contributes \$880 billion to the U.S. economy each year.

Watters, a 2004 graduate of Ohio Northern University, is project manager for a team that develops solar power plants for I&M from start to finish: siting, design, regulatory approval, contractor selection, and, ultimately, integrating solar power into the energy grid. "I never thought I'd be so excited to see the sun come up," she says, "but every time it does, I smile. These projects allow us to serve our customers with new sources of energy."

Powering America: The Economic and Workforce Contributions of the U.S. Electric Power Industry provides a detailed analysis of the role that electric companies—and employees like Watters—play in the nation's labor force and economy.¹ Employment opportunities are central to the economic health of our nation, and this study provides data that will help to inform federal and state policymakers and other key stakeholders as they tackle important decisions related to jobs, infrastructure, energy, capital deployment, environmental regulation, and economic growth.

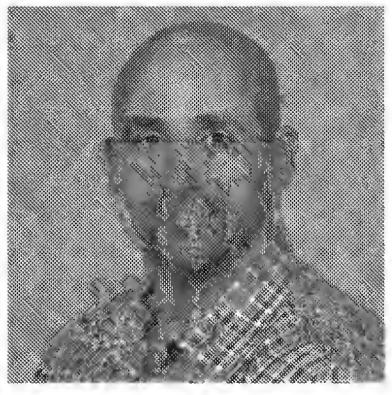
FACT

Each job directly provided by the electric power industry supports an additional 1.7 jobs in our communities.

This report finds that the electric power industry directly provides nearly 2.7 million jobs across the United States through its employees, contractors and supply chain, and investments. Moreover, more than 4.4 million jobs are supported through the induced effects of these jobs. In total, the electric power industry supports more than 7 million American jobs, equivalent to about 5 percent of all jobs in the United States.

¹ M.J. Bradley & Associates (MJB&A) worked with Economic Modeling Specialists International (Emsi) to characterize the economic impacts of the electric power industry in the United States. MJB&A conducted this study on behalf of the Edison Electric Institute (EEI), the American Public Power Association (APPA), and the National Rural Electric Cooperative Association (NRECA).

Powering America



Meet Victor Daboin, a senior energy conservation specialist at the Kissimmee Utility Authority (KUA).

After graduating high school, Daboin wasn't eager to go back to school and was unsure which of his varying interests—in IT, drafting, and geographic information systems—he wanted to pursue. Eventually, his mom gave him two options: come work for KUA or enlist in the military. Daboin's mom worked for KUA, so he decided to apply to be a meter reader. He told himself that if he didn't get the job, then he'd enlist in the Navy.

Fourteen years later, Daboin still works for KUA and helps customers use energy efficiently. His role requires a three-step certification process in which candidates must demonstrate a variety of competencies; the process can take up to six years to complete. Daboin completed all three stages in just over a year. He notes that the key to success in the role is understanding the technology and equipment, which he gained working in the meter shop for six years, and being customer-service oriented.

Daboin credits KUA for allowing him to explore a variety of interests and for supportive programs that allow him to go to school while working. He is on track to complete his associate degree in fall 2017, after which he'll begin pursuing a bachelor's degree in electrical engineering.

This report reinforces that the electric power industry underpins all sectors of the economy. Understanding the industry's value, economic contributions, and changing nature is crucial to policy decisions related to employment and economic growth.

The electric power industry—including investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers—is one of the great American success stories. Thomas Edison founded the first electric company in 1881, and, since then, the industry has provided high-quality jobs and has powered our nation's economic growth with remarkable consistency.

At the same time, it is important to understand that the electric power industry of today is not the same as it was 20 years ago—or even five years ago. The industry continues to transform rapidly, and electric companies today are providing new energy solutions to meet customers' changing needs and expectations. This transformation is enabled by the industry's ongoing investment of more than \$100 billion each year to make the energy grid more dynamic, more resilient, cleaner, and more secure; to diversify the nation's energy mix; and to integrate new technologies that benefit customers.

FACT

The electric power industry contributes \$880 billion to U.S. GDP—5 percent of total GDP.

The electric power industry is committed to meeting customers' needs by delivering electricity that is reliable and affordable, cleaner, and produced using a balanced energy mix that includes traditional energy resources as well as renewable ones. Today, the industry is making significant investments in diverse energy resources, including clean coal, natural gas, nuclear, solar, wind, and energy efficiency. The industry accounts for nearly all of the wind energy deployed across the country and is the largest investor in and owner of solar power. In fact, electric companies own 64 percent

of all solar in the country, and the industry's universal solar projects accounted for 72 percent of new solar capacity installed in 2016²—as Jennifer Watters' job as a solar project manager exemplifies.

Highlights

This report documents the role that the electric power industry plays in employment, wages, and the economy—both directly and indirectly.³ Highlights and key findings include:

- **Employment:** The electric power industry directly provides nearly 2.7 million jobs in communities across the United States. This includes jobs that are held by employees of investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers, as well as contractor and supply chain and investment jobs.⁴ The industry's impact on employment is even greater when induced jobs are considered. In total, the electric power industry supports more than 7 million jobs. This means about one in every 20 jobs (or 5 percent of all jobs) in the United States depends on the electric power industry.
- **Infrastructure Investment:** The electric power industry is the most capital-intensive industry in the United States.⁵ The industry operates infrastructure of breathtaking scale and complexity. In 2016, the industry's capital investments exceeded \$135 billion—a level of investment that is more than twice what it was a decade ago. These investments benefit customers and support jobs dedicated to building smarter energy infrastructure and to creating a cleaner generation fleet. Many of the individuals who support and build infrastructure projects are represented by organized labor.
- **Economic contributions:** The electric power industry directly contributed \$274 billion to U.S. Gross Domestic Product (GDP) in 2014, the latest year for which data are available. That's 1.6 percent of the nation's total economic output. In addition, the spending power of the 7 million jobs in the workforce ripples through our communities to contribute another \$606 billion. In total,

² U.S. Solar Market Insight 2016 Year in Review, GTM Research, March 2017.

³ The underlying analysis for this report was performed by Economic Modeling Specialists International (Emsi), using its proprietary Multi-Regional Social Accounting Matrix (or the Emsi model). See the Appendix for more background on Emsi's modeling approach, including a table of North American Industry Classification System (NAICS) codes used in this report.

⁴ The electric power industry provides about 491,000 jobs for employees of investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers. In addition, the industry provides 756,000 jobs through its contractors and supply chain, and the industry's significant annual investments provide more than 1.4 million jobs.

⁵ Fitch Ratings. U.S. Corporate Capex Study: Trends Are Relatively Flat for 2014, Special Report. September 23, 2013.

The electric power industry
SUPPORTS

7 MILLION+
AMERICAN JOBS

2,662,000
DIRECTLY PROVIDED

4,418,000
INDUCED*

491,000	756,000	1,415,000	678,000	959,000	445,000	2,336,000
ELECTRIC POWER INDUSTRY EMPLOYEES	CONTRACTORS & SUPPLY CHAIN	INVESTMENT IN POWER INDUSTRY EMPLOYEES	INDUCED BY POWER INDUSTRY EMPLOYEES	INDUCED BY CONTRACTORS & SUPPLY CHAIN	INDUCED PUBLIC SECTOR	ECONOMY-WIDE RIPPLE EFFECT

*Induced jobs are spread throughout the economy and include many positions that are the result of paycheck spending by workers and government spending to support the communities around those workers. (As an example, induced jobs can range from elementary school teachers to medical doctors to real estate professionals, not to mention the many jobs in the service economy.)

Powering America



Meet Riley Burdick, an operator for Arizona Public Service (APS).

Working 12-hour shifts, distribution operators like Burdick serve as the brains of APS' distribution system, which consists of 1.3 million meters and 29,000 miles of power lines over 34,646 square miles of service territory. It's their job to have situational awareness of the system, staying in close contact with first responders in the field so they can safely and efficiently find the cause of an outage and take the appropriate steps to restore power.

New customer and grid technologies are evolving at a rapid pace, and today's operators have to keep up. With his strong military background, Burdick is up to the challenge. Burdick spent the majority of his "working life" in the U.S. Army. His on-the-job education in the Army placed a premium on safety and leadership, and his studies in emergency and disaster management and counterterrorism at American Military University prepared him well for a job in which anything can happen.



Meet Nate Humphrey, the oldest apprentice lineworker in the history of Southside Electric Cooperative in Crewe, Virginia.

At 37, the U.S. Army veteran with more than 13 years of service as a paratrooper was considered completely disabled because of injuries that stretched from his brain to his legs, the consequences of hellish combat missions in Iraq, Afghanistan, Kosovo, and Kuwait. Humphrey served in the 82nd Airborne Division and the 25th Infantry Division, rising to the level of staff sergeant (E6). He was in seven combat deployments totaling 48 months. He was wounded in Afghanistan and in Iraq, taking shrapnel in both legs and suffering a traumatic brain injury from an improvised explosive device—a roadside bomb.

After attending an open house to learn more about the Power Line Worker School, a partnership between Virginia's community college system and its electric cooperatives, Humphrey sought a medical reevaluation and successfully worked to downgrade his disability classification. After graduation from the school's third class, Southside Electric hired Humphrey in January 2017. Humphrey started on a service truck doing calls to houses and fixing security lights before being moved to an underground crew. "I think I've found my second calling," he says. "I used to defend the country, and now I light it up."

the industry's economic impact is \$880 billion annually (approximately 5 percent of the nation's total GDP).⁶

- **Job quality:** As a whole, electric companies provide more than just good pay and good benefits. On average, employees work in the industry for more than 15 years, in careers that support their families and anchor them in their communities. In 2015, median annual wages for electric power industry employee jobs were \$73,000—double the national median. Including benefits, the industry's median annual compensation exceeds \$100,000.⁷ Often, jobs in the electric power industry fill a societal gap, helping to break the cycle of poverty in many communities.
- **Workforce development:** The electric power industry is committed to supporting employees today and to building tomorrow's energy workforce. Through the Center for Energy Workforce Development (CEWD) and partnerships with educational institutions, public workforce systems, and organized labor, the industry is working to create long-term employment solutions for a skilled, diverse workforce in the future. Of note, a majority of the skilled workforce is organized labor, and the industry works with organized labor to provide apprenticeship programs, on-the-job training, and continuing education.

FACT

The electric power industry is responsible for more than 7 million American jobs in communities large and small. From supporting new skills training to STEM education to resources for veterans, women, youth, and adults, the industry is creating long-term solutions and driving employment for a skilled, diverse workforce in the future.

Economic Impact Studies Versus Surveys/Census Methods

A key difference between this report and other recent energy workforce-related reports is the approach used to estimate the job impact numbers. Two methods commonly used are census-style approaches and economic impact modeling approaches. Under a census approach, total job estimates are developed using data self-reported by the targeted industry. A census is a count of all workers said to be related in one way or another to a given industry at any given time. It does not classify how workers are employed or where jobs are located along the supply chain. It also does not estimate an industry's broader economic impact.

This report is based on an economic impact study, which explores the downstream impacts of a job in a specific industry. To model these impacts, the jobs being examined (i.e., the direct jobs) must be identified and classified carefully. The economic and employment contributions of these jobs then are modeled using information that captures the interrelationships of industries, including an industry's reported supply chain and the purchases from that supply chain. The industry's broader economic impact (induced jobs) then is estimated based on spending generated by electric power industry employee, contractor and supply chain, and investment jobs. The initial classification of direct jobs is key to ensuring there is no double counting of downstream impacts. Because census reports are a raw count of jobs without classification, they do not show an industry's downstream impact and cannot be used to generate one.

As discussed in the Appendix, this report uses official, government-collected data as a starting point for its economic impact analysis. The electric power industry jobs reported to the U.S. Bureau of Labor Statistics (BLS) form the basis for modeled investment, supply chain, and induced jobs.

⁶ Estimated based on the electric power industry's impact on sales of all U.S. industry sectors and the ratios of those industries' national sales to GDP contributions. Modeled estimates and datasets were provided by Enisi.

⁷ Salary information pertains to the electric power industry's approximately 491,000 jobs for employees of investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers.

Powering America



Meet Cassandra Wheeler, a plant manager for Georgia Power's Plant Hammond in northwest Georgia.

Serving in this position since May 2014, Wheeler is responsible for overseeing the safe, reliable, and efficient generation of electricity and providing overall leadership for operations for the four-unit plant. In December 2017, Wheeler will assume a new role as regional director for Georgia Power.

When preparing to graduate from high school in Mobile, Alabama, Wheeler had her sights set on attending college in the state of Louisiana. Her mom made a last-minute decision due to the cost of the college in Louisiana that changed the course of Wheeler's career.

Wheeler already had been contacted by an Air Force recruiter, who painted a picture offering independence and education. She enlisted and, after basic training, attended 10 months of technical training to become a B-1B avionics test technician. After successful completion of the training, she was assigned to the 319th Bomb Wing in Grand Forks, North Dakota, where she was one of only three women. She was promoted to Senior Airman ahead of her peers due to her leadership, job performance, and work ethic. Wheeler credits her time in the Air Force for helping prepare her for a successful career in the electric power industry.

After graduating from the University of Cincinnati with a bachelor's degree in electrical engineering, Wheeler was hired at Alabama Power in 2001. She earned her MBA at the University of Alabama at Birmingham in 2007. Since then, she has served in various leadership roles in generation throughout her 16-year career with Southern Company.

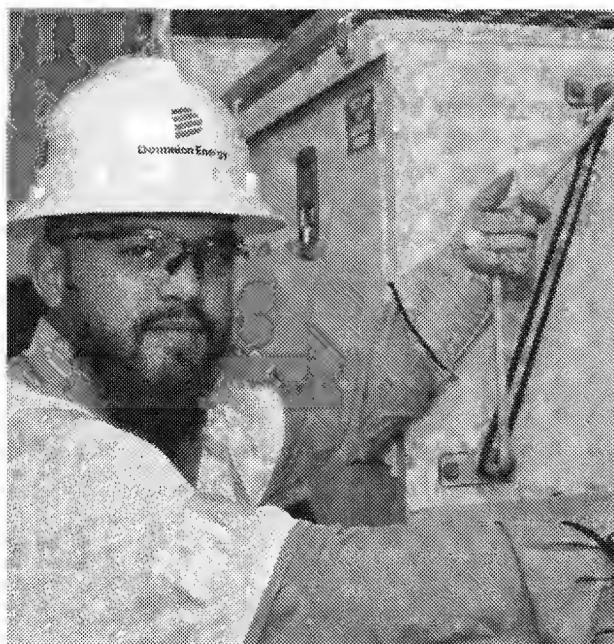


Meet Steve Leathe, hydropower compliance professional at NorthWestern Energy.

Leathe is a Massachusetts native who migrated to Montana after he graduated from the University of Maine with a degree in wildlife management. After earning a master's degree in botany from Montana State University, Leathe spent more than 28 years in various positions with the Montana Department of Fish, Wildlife and Parks before joining NorthWestern Energy in 2007, in part, to broaden his role in helping to maintain a healthy environment for the state's wildlife and its blue-ribbon trout fisheries.

- **Military hiring:** The electric power industry has a long history of employing military veterans because they have the training and skills that match those required for technical, engineering, support, and leadership positions in electric companies. Military veterans are an especially good fit for infrastructure jobs. Military veteran hiring accounted for more than 10 percent of new hires in the industry as of year-end 2014, the latest year for which data are available. The industry's Troops to Energy Jobs program, managed by CEWD, provides job opportunities for veterans, including many without a four-year college degree, and helps veterans transition from the military to rewarding energy careers. Since its creation in 2011, the Troops to Energy Jobs program has worked to streamline the hiring process for veterans, and its real-time database of available industry jobs can be mapped to skills gained in the military.

Tom Farrell, chairman, president and CEO of Dominion Energy, helped to launch Troops to Energy Jobs and said, "Through the program, dedicated, well-trained, and highly disciplined servicemen and servicewomen have a pathway toward stable, well-paying jobs in the private sector that closely fit their military skills." Farrell was raised in an Army family. He understands the difficulties and strain a career transition can put on military families. "There is no better way to honor our nation's returning veterans than by providing them with the tools they need to transition successfully to civilian life," he said. Since 2011, one out of every five new hires at Dominion Energy has been a military veteran.



With every advancement in technology, Americans are using electricity in more ways than ever. Our ever-increasing dependence on electricity underscores the vital importance of the electric power industry for our nation's security and prosperity and reinforces the role that electric companies play in improving the lives of all Americans. The bottom line: The electric power industry supports American jobs—and good ones—and powers our nation's economy.

The Electric Power Industry Generates Good Jobs

The electric power industry generates many of the best jobs in America—in traditional and in emerging areas. The industry provides employment to an exceptionally large demographic range—to both high school and college graduates, in every region of the country, and for most skill sets.

Overall, the industry offers a diverse number of careers—system operators, engineers, computer programmers, architects, lawyers, accountants, environmental researchers, cybersecurity specialists, call center employees and customer-service representatives, and many more. For example, electric companies employ meteorologists to forecast bad weather, so they can take measures to protect infrastructure and reliability. Foresters work alongside tree trimmers to keep long-distance transmission lines working, sometimes along remote, dangerous terrain. Fraud specialists fight identity theft. Nuclear engineers keep reactors running safely. Landscape architects manage storm water runoff. And electricians, lineworkers, and fieldworkers perform some of the industry's most visible jobs from bucket trucks and cranes.

Importantly, the industry's jobs are stable, which is especially vital for regions of the country where the economy may not be strong. As mentioned earlier, labor unions represent a majority of the industry's skilled workers. Many supplier firms, such as those in construction and heavy equipment, have significant union representation as well. The International Brotherhood of Electrical Workers, the Utility Workers Union of America, and affiliate members of North America's Building Trades Unions are key partners in apprenticeship programs that supply qualified workers to accomplish capital-intensive projects. Apprenticeships let workers train on the job and on the clock, providing a key employment alternative to higher education. The industry also has extensive business and supplier diversity programs that incorporate minority-owned businesses into its supply chain.

Powering America



Meet John Reinhart, demand response and technologies lead for Great River Energy (GRE), a generation and transmission cooperative based in Maple Grove, Minnesota.

As the lead engineer responsible for managing electric load, Reinhart is on the front lines of the co-op's transition to a digitally controlled system, and he's using new data and analysis tools to keep costs low for consumers while increasing the efficiency of the energy grid.

For decades, co-ops have operated demand response programs using one-way radio communication. GRE is now in the process of deploying two-way smart meters that will give Reinhart real-time data. The new system enables the adoption of new control technologies, such as smart thermostats and Wi-Fi-enabled devices.

Reinhart will use these technologies to avoid the need for new electric generating capacity. "A big shift is occurring in the utility industry, and that shift is creating big opportunities. The opportunity to make the grid more efficient, that's what's exciting about my job," says Reinhart.

Paying Talented Workers What They Deserve

Median annual wages for direct electric power industry employees were \$73,000 in 2015, the latest year for which data are available. This is twice the national average. With benefits, including health care and retirement contributions, median annual compensation exceeds \$100,000.

Nearly every job category in the industry earns a median wage of \$30 or more per hour, plus health and retirement benefits. Many of these skilled, well-paying jobs do not require a four-year college degree, unlike many other jobs with similar pay and benefits. Further, employment opportunities in the industry are expected to grow for many types of workers over the next decade.

Energy Infrastructure Projects Are Vital

The electric power industry is committed to providing safe, reliable, affordable, and increasingly clean energy to all customers. The industry also is committed to building a diverse, highly skilled energy workforce to meet customers' evolving energy needs. On average, the industry invests more than \$100 billion each year to build smarter, cleaner, and more resilient energy infrastructure.

Since Superstorm Sandy in 2012, investor-owned electric companies alone have invested more than \$175 billion in transmission and distribution systems. These investments have hardened the energy grid and support a more efficient response by electric companies following storms, natural disasters, or other events.

FACT

The electric power industry is the most capital-intensive industry in the United States. The industry's investments support jobs and make the energy grid more dynamic, more resilient, cleaner, and more secure for all Americans.

The contributions and scope of the industry's infrastructure jobs cannot be overstated for skilled trade workers. Southern Company's Plant Vogtle is a telling example. The company is investing nearly \$10 billion to build two nuclear reactors in Georgia. Southern Company partnered with North America's Building Trades Unions, creating 5,000 onsite jobs for hard-working, highly skilled craftsmen and women. When the two reactors begin operation, the plant will permanently employ 800 workers while providing 2,200 megawatts of zero-emissions energy.

Electricity Drives the U.S. Economy

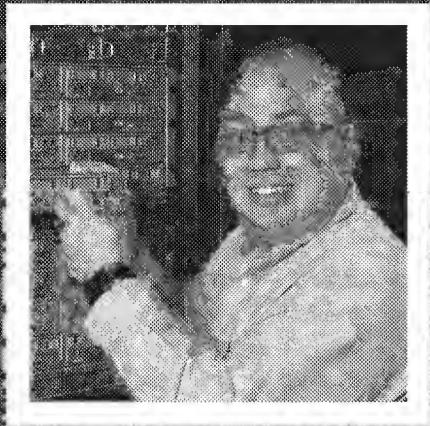
Nearly everything we do depends on an affordable and reliable supply of electricity. The electric power industry is focused on serving customers and on creating energy solutions to meet customers' changing needs. At the same time, the industry is making long-term investment and planning decisions, and is transforming the energy grid to be responsive to new resources, new technology options, and changing customer expectations.

Several trends are driving change in the industry today. Chief among them are declining costs for natural gas and renewable energy resources that are developed at scale; changing customer expectations; environmental regulations; and the growth of distributed energy resources, including energy storage, private (or rooftop) solar, microgrids, demand response, energy efficiency, and electric vehicles. How these trends continue to unfold across the nation, and how well the industry is able to work with other stakeholders, will determine the success of this transformation for customers. Ultimately, investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers all share common goals and a commitment to provide safe, reliable, affordable, and increasingly clean energy for all customers.

It is important to note that, while the industry is making significant investments, electricity remains a great value. In 2016, residential electricity's share of total consumer expenditures was only 1.4 percent, the lowest it has been in the last 58 years. This means that for every dollar of customer expenditures, less than a penny and a half went to pay electric bills.⁸

⁸ "How Low Can You Go?" daily commentary from Steve Mitnick, *Public Utilities Fortnightly*, January 31, 2017, based on Personal Consumption Expenditures data from the U.S. Bureau of Economic Analysis.

Powering America



Meet Phil Crump, a network security administrator for Blue Ridge Energy.

With increasing cybersecurity threats, Crump and many others within the electric power industry work to protect the energy grid and to safeguard critical infrastructure.

"Serving our members is also about protecting their information and safeguarding our servers and system against security breaches," Crump says. "Hackers work overtime to disrupt the grid and steal personal identities and financial information. We all work diligently to protect the thousands of members of our community. Really, we view

every single one of those members as part of one big Blue Ridge family. And when you look at it that way, we don't need any extra motivation to safeguard our grid, along with our members' information."



Meet Michele Kimich, a meter data analyst at Bryan Texas Utilities (BTU).

Technology is an ever-changing, ever-present beast full of data that is the focus of nearly all global industries. BTU realized the amount of data that new technologies can provide, and created Kimich's position in 2015 to interpret the information to benefit the utility and its customers.

Kimich has experience taming beasts, given her degree in agricultural business and her first position as an agriculture science teacher.

She became interested in analytics when she landed a job at a local electric cooperative, first assisting large commercial accounts and then managing the billing department for nearly 10 years. It was there that she recognized that the real-time data retrieved from individual meters can help customers manage their usage, while allowing electric companies to make informed decisions regarding rates, system loads, and planning for the future.

"The meter data measures the vital signs and determines the health of a utility," Kimich says. At any given time, she can use the interval data collected from more than 55,000 meters every 15 minutes to measure revenues, study feeder management, and examine peak consumption.

This report provides a foundation of knowledge and data to support policy decisions that create a strong economy and vibrant labor force. The report captures the deep contributions of the electric power industry to our economy and to our workforce—the industry creates and supports high-quality jobs in every state and the District of Columbia—and demonstrates how the industry's ongoing and substantial investments

benefit communities by creating jobs, generating tax revenue, and building the smarter energy infrastructure that will power our energy future. Most important, this report reminds us that, behind every wall outlet or light switch, there is a dedicated workforce focused on powering the lives of millions of Americans who rely on electricity for nearly everything they do.



M.J. Bradley & Associates, LLC

Michael J. Bradley

President and Founder

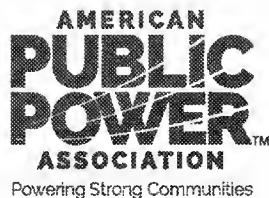
M.J. Bradley & Associates, LLC



Tom Kuhn

President

Edison Electric Institute



Sue Kelly

President and CEO

American Public Power Association



Jim Matheson

CEO

National Rural Electric Cooperative Association

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Understanding the electric power industry's value, economic contributions, and changing nature is crucial to policy decisions related to employment and economic growth.

Michael J. Bradley
President and Founder, M.J. Bradley & Associates

Our industry is so vital to America's economy, supporting more than 7 million jobs. Often, jobs in our industry fill a societal gap, helping to break the cycle of poverty in many communities. As our society continues to become more dependent on electricity, we are creating long-term solutions to address the need for a skilled, diverse workforce to meet the future demands of our customers.

Tom Kuhn
President, EEI

The nation's more than 2,000 community-owned, not-for-profit public power utilities are proud to be a part of an industry that provides millions of jobs to hardworking Americans. Community-owned public power utilities provide local jobs that keep dollars in their communities, supporting families and representing a significant piece of our American economy.

Sue Kelly
President and CEO, APPA

Affordable and reliable electricity is the heartbeat of the American economy and is essential to the nation's economic growth. As not-for-profits owned by the members we serve, our broader purpose is to empower local communities to thrive. Co-ops are proud to continue recruiting top-tier talent from local communities as we work to meet tomorrow's energy needs.

Jim Matheson
CEO, NRECA

The electric power industry is a major driver of our economy, directly providing more than 2.7 million good jobs in communities across the nation. The IBEW is working closely with our management partners to maintain the best trained energy workforce in the nation so we as an industry can continue to support a healthy economy and good jobs.

Lonnie R. Stephenson
International President, International Brotherhood of Electrical Workers (IBEW)

The positive economic effects of the electric power industry are felt around the country, supporting middle-class families and their communities. We're proud to partner with the industry through our Power for America program to build one of the safest, most highly trained workforces in the nation.

Mike Langford
President, Utility Workers Union of America (UWUA)

The electric power industry is a key driver of the economy and jobs in America. The industry's infrastructure investments support jobs with strong wages and benefits for millions of Americans, including the men and women of the building trades.

Sean McGarvey
President, North America's Building Trades Unions

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Powering America: The Economic and Workforce Contributions of the U.S. Electric Power Industry

Detailed Findings



INTRODUCTION

The electric power industry is responsible for more than 7 million jobs in the United States and employs workers throughout the nation in a wide variety of occupations and professions.

Our analysis finds that the electric power industry directly provides nearly 2.7 million jobs in communities across the United States. This includes jobs that are held by employees of investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers, as well as contractor and supply chain and investment jobs.⁹

The industry's employment impact is even greater when induced jobs are considered. In total, the electric power industry supports more than 7 million jobs. This means about 1 in every 20 jobs (or 5 percent of all jobs) in the United States depends on the electric power industry.

The electric power industry directly contributes \$274 billion to the nation's Gross Domestic Product (GDP). In addition, the spending power of the 7 million jobs in the broader workforce ripples through our communities to contribute another \$606 billion.¹⁰ The total economic impact of the industry is \$880 billion, or about 5 percent of the nation's nearly \$18 trillion GDP.

The purpose of this report is to provide a deeper understanding of the electric power industry's impact on jobs and on our nation's economy. The electric power industry is committed to delivering the safe, reliable, affordable, and

3 FACTS AT A GLANCE

1. The electric power industry supports more than 7 million American jobs—about 5 percent of all U.S. jobs.
2. The electric power industry contributes about 5 percent of total U.S. GDP to the nation's economy.
3. The electric power industry is the most capital-intensive economic sector in the United States, investing more than \$100 billion each year to build smarter, cleaner, and more resilient energy infrastructure.

increasingly clean energy that powers America's economy and quality of life. To do so, the industry relies on a diverse set of energy resources and makes significant investments to make the energy grid smarter, cleaner, and more resilient. The industry continues to be the most capital-intensive economic sector, investing more than \$100 billion each year over and above operations and maintenance in each of the past five years.

New and changing sources of electricity supply and demand are driving significant shifts and innovation in the electric power industry. As a result, the industry is poised to have an even larger influence on employment and on economic growth as more aspects of daily life are powered by electricity.

⁹ The electric power industry provides about 491,000 jobs for employees of investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers. In addition, the industry's contractors and supply chain provide 756,000 jobs, and the industry's significant annual investments provide more than 1.4 million jobs.

¹⁰ Estimated based on the electric power industry's impact on sales of all U.S. industry sectors and the ratios of those industries' national sales to GDP contributions. Modeled estimates and datasets were provided by Economic Modeling Specialists International (Emsi).

Figure 1. Summary of Jobs Supported by the Electric Power Industry

The electric power industry SUPPORTS 7 MILLION+ JOBS

2,662,000
DIRECTLY PROVIDED

4,418,000
INDUCED*

491,000	756,000	1,415,000	678,000	959,000	445,000	2,336,000
ELECTRIC POWER INDUSTRY EMPLOYEES	CONTRACTORS & SUPPLY CHAIN	INVESTMENT	INDUCED BY POWER INDUSTRY EMPLOYEES	INDUCED BY CONTRACTORS & SUPPLY CHAIN	INDUCED PUBLIC SECTOR	ECONOMY-WIDE RIPPLE EFFECT

*Induced jobs are spread throughout the economy and include many positions that are the result of paycheck spending by workers and government spending to support the communities around those workers. (As an example, induced jobs can range from elementary school teachers to medical doctors to real estate professionals, not to mention the many jobs in the service economy.)

Today, the industry is working to ensure that its workforce has continuous access to training to support the ongoing investment in the energy grid and its advanced and high-tech infrastructure projects. The industry also is committed to workforce diversity and continues to ensure that its workforce reflects the communities that it serves. Working in partnership with the Center for Energy Workforce Development (CEWD), organized labor, and community colleges and universities across the country, the industry has created a number of workforce development programs to meet these goals.

On behalf of the Edison Electric Institute (EEI), the American Public Power Association (APPA), and the National Rural Electric Cooperative Association (NRECA), M.J. Bradley & Associates (MJB&A) worked with Economic Modeling Specialists International (Emsi) to characterize the economic impacts of the electric power industry in the United States. CEWD also provided valuable insight and data to this analysis. This information provides detailed statistics on the size and composition of the electric power industry workforce, as well as the jobs that support the electric power industry throughout

the economy. Emsi used publicly available data as input to its proprietary input-output (I-O) model to develop the wider job and economic impact estimates.¹¹

ECONOMIC MODELING OF THE JOBS AND CONTRIBUTIONS OF THE ELECTRIC POWER INDUSTRY

In this report, we explore the economic and workforce contributions of the electric power industry in three areas: (1) annual spending on the daily operation of the existing infrastructure, including the wages paid to the highly skilled employees throughout the industry; (2) the ongoing investments in electric power generation, transmission, and distribution systems; and (3) the broader economic contributions of the industry through its supply chain and through the spending of its workers.¹² Quantifying the employment and economic contributions of the electric power industry with any precision, however, is a complex task. This report attempts to provide a multi-dimensional picture of the broad reach of the industry.

¹¹ See the Appendix for background on Emsi's modeling approach.

¹² For the purposes of this report, we have defined the electric power industry as the investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers that operate electric generating stations, whether those are coal-based or natural gas-based power plants, nuclear power plants, hydropower facilities, or wind or solar energy centers; those that maintain transmission lines; and those that distribute and deliver electricity to homes and businesses.

The jobs discussed in this report include both full-time and part-time jobs. This report does not distinguish precisely between the full-time and part-time positions, as we did not have sufficient data to do so.

Jobs Provided by the Electric Power Industry

Utilizing the economic I-O model developed and operated by Emsi, we estimate that the electric power industry supports more than 7 million jobs. These jobs are split into two primary categories: directly provided jobs and induced jobs. Each is summarized and broken down in more detail in Figure 1.

The Electric Power Industry's Directly Provided Jobs

Electric Power Industry Employee Jobs

Overall, we find that there are about 491,000 workers employed by investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers.¹³

Many of the jobs associated with the industry are well known to the public. These include lineworkers who maintain the energy grid and restore power after storms or other events, and customer service representatives who respond to customer needs. There are also many less familiar jobs and professions across dozens of disciplines. In addition, there are many employees within skilled trades—such as master electricians, heavy equipment operators, wind ops workers, solar technicians, and combustion system mechanics—many of whom are represented by labor organizations that play a critical role in job training and development.

Contractor and Supply Chain Jobs

The industry's supply chain includes skilled contractors who work side-by-side with electric power industry employees. It also includes employees of companies that produce fuel for the industry and advanced manufacturing firms that supply the tools and equipment to operate and maintain the system. **We estimate that the electric power industry's contractors and supply chain provide 756,000 jobs.** This includes jobs associated with the contractors who support the industry and the immediate supply chain to the industry. For example, these workers include those employed by natural gas production companies that provide natural gas to power

plants. Additional jobs are provided by the suppliers of the suppliers in the extended supply chain. These include, for example, the manufacturers of equipment such as valves and meters that are used by natural gas production companies. In the case of both immediate and extended supply chain jobs, the number of jobs associated with the supplying industry is apportioned based on sales to the electric power industry. In this way, for example, not all natural gas production jobs are counted as electric power industry supply chain jobs; we count only the fraction of jobs that is supported by the electric power industry's purchases.

Investment Jobs

The significant annual investments by the electric power industry to build smarter energy infrastructure and to continue the transition to even cleaner generation sources are expected to exceed \$100 billion annually for the next several years. **We estimate that level of investment provides more than 1.4 million jobs.** While these workforce impacts, including jobs associated with design and construction, traditionally are thought of on a project-by-project basis, we have endeavored to quantify the broad national economic contributions of the overall investments being made by the industry.

Capital investments made by the electric power industry benefit customers and are critical to the day-to-day reliable and secure function of the energy grid and the entire electric power system.

The Electric Power Industry's Induced Jobs

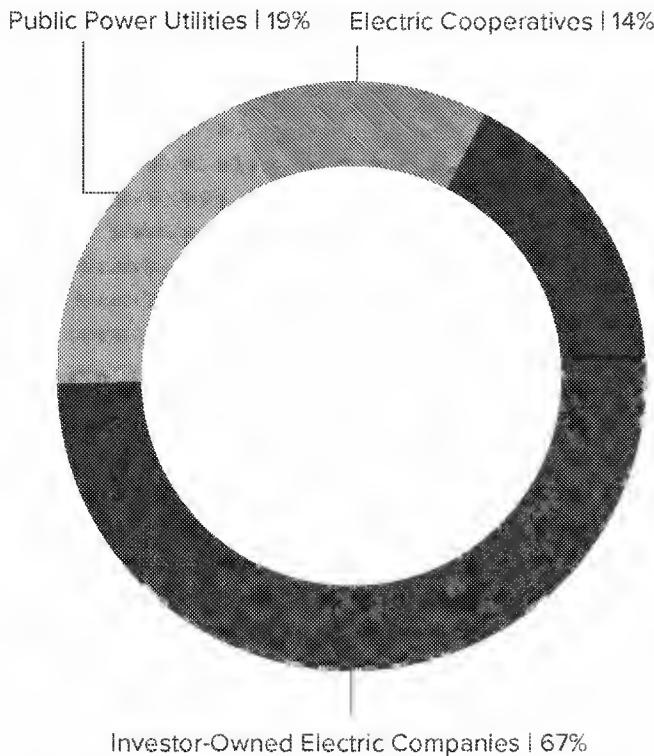
Induced Jobs

All of the jobs supported by the electric power industry—whether those jobs, for example, are electric power industry employee jobs at a power plant, contractor and supply chain jobs at a natural gas production site, or investment jobs at the construction site of a new wind energy center—result in spending that supports additional jobs in the economy. These induced jobs are spread throughout the economy and include many positions that are the result of paycheck spending by workers and government spending to support the communities around those workers. (As an example, induced jobs can range from elementary school teachers to medical doctors to real estate professionals, not to mention the many jobs in the service economy.¹⁴)

¹³ The core dataset developed by Emsi focused on employees of investor-owned electric companies and electric cooperatives. For the purposes of this report, Emsi took additional steps to estimate the workforce associated with public power organizations, which include government- and community-owned electric utilities. At the national level, Emsi estimated that jobs held by employees of these organizations accounted for about 22 percent of the industry total. The job numbers herein reflect this increase.

¹⁴ While all of the job estimates in this report include both full-time and part-time jobs, the magnitude of the industry's impact on induced jobs reflects the compensation associated with electric power industry employee jobs, contractor and supply chain jobs, and investment jobs.

Figure 2. Employment by Ownership



Source: Calculated by MJB&A based on Energy Information Administration and Federal Energy Regulatory Commission data.

We estimate that electric power industry employee jobs support 678,000 induced jobs, while contractor and supply chain jobs support another 959,000 induced jobs. Government spending of tax revenue—on schools, policing, transportation, infrastructure, and other services to support the communities where the industry operates and its employees live—results in an additional 445,000 public-sector jobs.

Moving deeper into the economy, economic modeling suggests the electric power industry employee, contractor and supply chain, and investment jobs result in further spending attributable to the industry that supports additional induced jobs. These extended impacts support an estimated additional 2.3 million induced jobs. In total, we estimate that

the electric power industry supports more than 4.4 million induced jobs.

A More Detailed Analysis of the Nearly 2.7 Million Jobs Directly Provided by the Electric Power Industry

Each day, the dedicated men and women who work in the electric power industry operate power plants, manage customer relations, maintain transmission and distribution systems, and carry out countless other tasks and functions that keep the energy grid running safely and reliably around the clock. These workers are employed by investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers. We refer to the positions these workers hold as electric power industry employee jobs.

Electric power industry workers in the United States are employed by a wide range of organizations. Following the conventions of the North American Industry Classification System (NAICS), and as further detailed in the Appendix, the electric power industry employee jobs represent the workforce employed by the organizations that manage the generation of electricity and organizations that transmit and distribute power.¹⁵

As noted, we estimate that there are about 491,000 electric power industry jobs provided by investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers. (See Figure 1.) As shown in Figure 2, investor-owned electric companies employ 67 percent of those workers, public power utilities employ 19 percent, and electric cooperatives employ 14 percent.

According to the U.S. Department of Energy's Energy Information Administration, the electric power industry had combined sales of more than \$390 billion in 2014.¹⁶ We estimate that these sales contributed about \$274 billion, or 1.6 percent, to national GDP. Industry sales are used to compensate employees and to invest in new energy infrastructure, as well as to pay taxes, where applicable. By modeling the sales as they move through the economy, this study estimates the impact of the electric power industry on jobs throughout the U.S. economy.

¹⁵ Many electric distribution companies in the United States are part of larger corporations that own natural gas local distribution companies. This report only considers the economic impact of electric power industry jobs. For the purposes of this report, we have defined the electric power industry as the investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers that operate electric generating stations, whether those are coal-based or natural gas-based power plants, nuclear power plants, hydropower facilities, or wind or solar energy centers; those that maintain transmission lines; and those that distribute and deliver electricity to homes and businesses.

¹⁶ Calculated by MJB&A based on Energy Information Administration Form EIA-361 "Electric power sales, revenue, and energy efficiency" Released October 6, 2016. Available at <https://www.eia.gov/electricity/data/eia361/>.

Electric Power Industry Employees Have Good Jobs with Good Pay

The electric power industry requires a highly skilled workforce to build and maintain the energy grid and the electric power system. To attract and retain the necessary skills and talent, median annual wages for direct electric power industry employees are double the national median.¹⁷ In 2015, median annual wages for direct electric power industry workers were \$73,000, which does not include retirement plan matching programs, employer contributions to health insurance premiums, or other benefits. Including benefits, the median annual compensation exceeds \$100,000.¹⁸

According to data collected by CEWD, hiring across the electric power industry is increasing, which is expected to largely offset the industry's anticipated personnel retirements. This data further highlights hiring increases, particularly among workers between the ages of 23 and 38. In fact, since 2006, hiring of employees under the age of 37 in the key job categories tracked by CEWD has increased by more than 6 percent.¹⁹

Electric Power Industry Contractor and Supply Chain jobs

The electric power industry has more than \$1 trillion in physical assets and equipment across the country, including power plants, substations, towers, transmission and distribution lines, smart meters, transportation fleets, office facilities, and more. Operating and maintaining this complex system require a strong contractor force, which fulfills many important roles and works side-by-side with electric power industry employees. Workers across the system operate sophisticated equipment that is manufactured by skilled workers employed by advanced technology firms.

The broad range of supply chain jobs includes those jobs associated with the immediate supply chain to the electric power industry and the contractors who support it, as well as the extended supply chain: suppliers of the suppliers. We estimate that the electric power industry's contractors and supply chain comprise about 756,000 jobs. The substantial number of contractor and supply chain jobs underscores the critical role that contractors and their workers play in the industry.

More than half of the industry's contractor and supply chain jobs are the result of purchases by the electric power industry to support operations and employee jobs. For example, these include jobs associated with fuel acquisition (e.g., natural gas producers, coal miners, etc.) that are attributable to the electric power industry, as well as jobs associated with regular maintenance that are not included in the electric power industry employee jobs estimate (e.g., contractors retained to clear vegetation around power lines, manufacturers of replacement parts, etc.). In this sense, some supply chain jobs may involve similar or identical job functions as certain employee jobs, but the workers are employed by a company not captured with the government reporting for the electric power industry.

Many industries are part of the electric power industry supply chain, but only some of the jobs in those industries can be attributed to the electric power industry. For example, more than two-thirds of the natural gas produced in the United States is used to heat homes and as an input to industrial processes. In these cases, the economic model does not classify those jobs as suppliers to the electric power industry.

Other contractor and supply chain jobs are the result of purchases by companies to support contractor and supply chain jobs. For example, these include companies that supply equipment to coal mining companies and natural gas producers. They also include jobs associated with developing the equipment that contractors use to maintain properties around power plants and power lines. The supply chain also includes many professional services, such as consulting and accounting, real estate management, and building services (such as janitorial and other maintenance services).

Investment Jobs

The electric power industry's investments are enhancing our nation's electric generation, transmission, and distribution infrastructure and technology. These investments also expand and change economic impacts in communities across the country.

The owners and operators of generation, transmission, and distribution infrastructure invested approximately \$120 billion in 2014 and in 2015. Industry capital investments exceeded

¹⁷ U.S. Bureau of Labor Statistics. Occupational Employment Statistics, May 2015. Electric power industry data are available at https://www.bls.gov/oes/current/naics4_221100.htm. General data at https://www.bls.gov/oes/current/oes_nat.htm#00-0000.

¹⁸ Salary information pertains to the approximately 491,000 employees of investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers.

¹⁹ Center for Energy Workforce Development. Gaps in the Energy Workforce Pipeline: 2015 CEWD Survey Results. November 2015.

\$135 billion in 2016. The industry expects capital investments to exceed \$115 billion annually for the next several years.²⁰

The significant and diverse investments by the electric power industry require a diverse and specialized workforce. These investments create opportunities at project sites and in corporate offices for workers who provide services in finance, engineering, procurement, project management, construction oversight, and other project support services. They also create opportunities for skilled craft construction workers who work onsite to build or install new infrastructure. Jobs associated with the design and construction of new advanced technologies—such as wind, solar, and distribution equipment—are high-paying jobs.

Using the modeling tools developed by Emsi, we estimate that the broad economic impact of the electric power industry's \$120 billion capital investment in 2014 (the model year) supported more than 1.4 million jobs.²¹ (See Figure 1.) The composition of these jobs varies from year to year, but we expect that the industry will sustain a similarly high level of investment throughout the country for the next several years as the industry builds smarter energy infrastructure and deploys new, cleaner generation technologies.

An Analysis of the More Than 4.4 Million Induced Jobs Supported by the Electric Power Industry

Adding together the electric power industry employee, contractor and supply chain, and investment jobs, we find that the electric power industry directly provides nearly 2.7 million jobs. This is an impressive figure, but it only begins to quantify the total economic impact of the industry across the country.

Using its economic model, Emsi estimated the jobs that result as spending moves from electric power industry employee, contractor and supply chain, and investment jobs into the broader economy. Economists typically refer to these transactions as "induced effects" or "induced jobs," thus capturing the broad impacts of the industry.

Estimated induced jobs are largely the result of two kinds of spending:

- **Paycheck spending:** As workers spend their paychecks, additional employment opportunities are created. For example, when a power plant operator receives a paycheck, he or she will spend some portion of those dollars on goods and services, including housing, medical care, food, and entertainment. This spending supports a portion of the jobs at various institutions, for example, nursing jobs at a hospital or part-time jobs at a coffee shop.
- **Government spending:** Every part of the economy is supported on some level by government spending. The model quantifies the impact of government spending in communities as a result of taxes paid by the industry and by workers. Spending by government supports a range of jobs, including teachers at schools and first responders at police and fire stations.

What Types of Employee Jobs Does the Electric Power Industry Provide?

As the energy grid evolves to better provide and support new technologies and services, the electric power industry increasingly requires innovative skills and knowledge from employees with experience applying advanced technology and data analytics. To attract and retain a highly skilled workforce for the future, the electric power industry has created a range of workforce development initiatives in partnership with educational institutions and organized labor. As explained later in the report, many of these initiatives are focused on developing an increasingly diverse workforce. Hiring across all positions in the industry is expected to rise in the coming years to fill gaps and respond to evolving needs in the industry.

Many of the jobs in the electric power industry can be categorized in one of four key occupations that perform the myriad of specialized tasks within the industry:

- Engineers
- Lineworkers
- Plant and field operators
- Technicians²²

²⁰ Estimates are based on capital expenditure projections provided by EEI, APPA, and NRECA. EEI estimates capital expenditures (excluding investments associated with natural gas companies) by investor-owned electric companies were \$84 billion in 2014, \$91 billion in 2015, and \$96 billion in 2016. APPA estimates capital expenditures of \$20 billion to \$25 billion annually based on an analysis of sales and generation. NRECA estimates capital expenditures averaged \$13 billion between 2010 and 2014. Based on recent trends, EEI estimates an additional \$1.5 billion in annual capital expenditures by independent power producers.

²¹ As described in the Appendix, Emsi developed this estimate using its Input-Output model, assuming the capital expenditures were part of the sales included in the model.

²² MJB&A worked with CEWD to identify these occupations and the associated jobs.

Economic Impact Studies Versus Surveys/Census Methods

A key difference between this report and other recent energy workforce-related reports is the approach used to estimate the job impact numbers. Two methods commonly used are census-style approaches and economic impact modeling approaches. Under a census approach, total job estimates are developed using data self-reported by the targeted industry. A census is a count of all workers said to be related in one way or another to a given industry at any given time. It does not classify how workers are employed or where jobs are located along the supply chain. It also does not estimate an industry's broader economic impact.

This report is based on an economic impact study, which explores the downstream impacts of a job in a specific industry. To model these impacts, the jobs being examined (i.e., the direct jobs) must be identified and classified carefully. The economic and employment contributions of these jobs then are modeled using information that captures the interrelationships of industries, including an industry's reported supply chain and the purchases from that supply chain. The industry's broader economic impact (induced jobs) then is estimated based on spending generated by electric power industry employee, contractor and supply chain, and investment jobs. The initial classification of direct jobs is key to ensuring there is no double counting of downstream impacts. Because census reports are a raw count of jobs without classification, they do not show an industry's downstream impact and cannot be used to generate one.

As discussed in the Appendix, this report uses official, government-collected data as a starting point for its economic impact analysis. The electric power industry jobs reported to the U.S. Bureau of Labor Statistics (BLS) form the basis for modeled investment, supply chain, and induced jobs.

According to CEWD's 2015 survey of the energy workforce, these four key occupations make up 44 percent of total energy industry employees.²³ Additionally, CEWD identified engineers and technicians as the roles with the highest percentage of workers over 53 years of age, and concluded that these two job categories have the potential for significant retirements in the coming years.

In response, the electric power industry is expected to have a large demand for more highly skilled workers, particularly engineers and technicians, and is preparing by developing training programs to maintain a workforce with strong technical capabilities. Although they are highly skilled, many of these positions do not require a four-year college degree. Lineworkers, plant and field operators, and technicians can enter the workforce after completing two-year training programs, or they can learn the skills they need through apprenticeship programs, often with the support of organized labor.

Engineers, lineworkers, plant and field operators, and technicians form the core of the electric power industry's workforce and are responsible for building and maintaining the complex system. The tasks that these skilled workers perform are multifaceted and broad, ranging from installing new digital smart grid technology in residential neighborhoods to refueling nuclear power plants. These jobs have an outsized impact on the economy and provide high-paying, lifetime careers to many Americans.

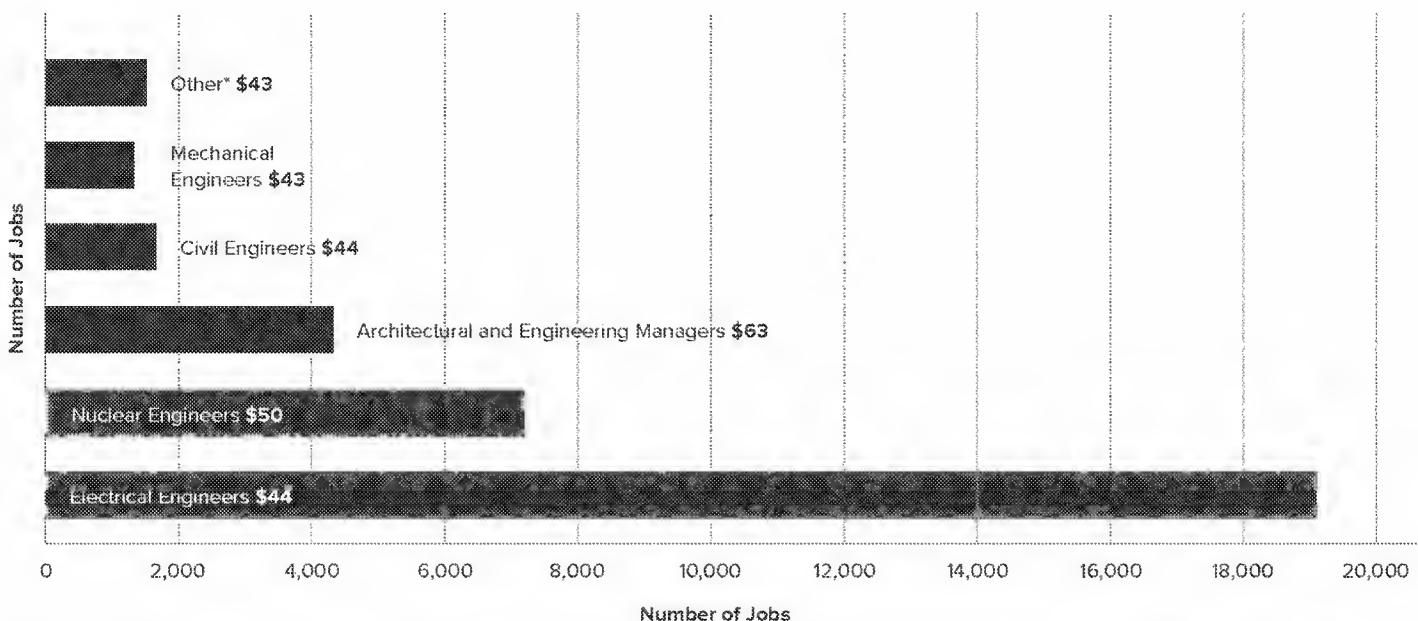
We review each of these key occupations on the next few pages.²⁴ Due to data limitations, we focus on job counts reported for investor-owned electric companies and electric cooperatives. For the purposes of this study, we assumed that public power utilities and independent power producers are structured similarly to investor-owned electric companies and electric cooperatives. In order to fully account for these key jobs, we have included jobs associated with the natural gas distribution segment in the totals.²⁵

²³ Center for Energy Workforce Development. Gaps in the Energy Workforce Pipeline: 2015 CEWD Survey Results. November 2015.

²⁴ The median hourly wage data for the following job categories are based on the same U.S. Bureau of Labor Statistics, Occupational Employment Statistics, May 2015, as was cited earlier. Electric power industry data are available at https://www.bls.gov/oes/current/naics4_221100.htm.

²⁵ A number of companies in the electric power industry also operate natural gas distribution business units. In the discussion of the key occupations, we include jobs associated with natural gas distribution, as well as electric power generation, transmission, and distribution. Natural gas distribution was not included in the economic modeling.

Figure 3. Electric Power Industry Engineering Jobs and Median Hourly Wages



*Other engineer categories include environmental, health and safety, and chemical engineers. The hourly wage displayed for the "Other" category is a weighted average of the category medians.

Engineers

More than 35,000 engineers work for electric and natural gas distribution companies. While certain types of engineers, such as civil and electrical engineers, also work in other industries, occupations such as nuclear power engineers are largely unique to the electric power industry. According to CEWD's 2015 Energy Workforce Demand report, the number of engineering jobs is projected to grow by 3.6 percent between 2014 and 2024. These jobs are highly compensated, with most median salaries higher than \$40 per hour. Figure 3 shows the distribution of engineers across the electric power industry and the median hourly wage for these jobs, which ranges from \$40 per hour for environmental engineers to \$63 per hour for architectural and engineering managers.

Lineworkers

Lineworkers are the jobs most often associated with the electric power industry and are its most visible profession. The role of the lineworker may seem straightforward: installing and repairing the power lines that crisscross America's neighborhoods and deliver electricity when and

where it is needed. However, the day-to-day tasks involved in this career are complex and challenging, ranging from restoring power in extremely challenging storm conditions, to utilizing new sources of data to identify the cause of an outage, to safely conducting electric repairs and installations while hanging 50 feet or more above the ground. Across the United States, more than 74,000 lineworkers, line mechanics, and supervisors work day and night in all conditions to keep electricity flowing safely and reliably to American homes and businesses.

According to CEWD, of the four key occupations, lineworker jobs will experience the greatest growth between 2014 and 2024, adding more than 3,500 jobs. CEWD 2015 survey data show that younger workers entering the workforce are filling lineworker positions. As of 2014, more than half of these workers were under 42 years old, and 25 percent were under 32 years old.²⁶ Figure 4 emphasizes the high-paying nature of these jobs, with both categories paying a median wage of more than \$30 per hour.

²⁶ Center for Energy Workforce Development, Gaps in the Energy Workforce Pipeline, 2015 CEWD Survey Results, November 2015.

Power Plant and Field Operators

Similar to lineworkers, plant and field operator positions are unique to the electric and natural gas generation industries. These workers, of whom there are nearly 45,000, run the power plants that provide the nation's electricity and the compressor stations that ensure natural gas is available to power plants and to customers. Information on the number of operator jobs and their compensation is found in Figure 5.

Technicians

Technicians consist of the wide range of skilled employees working in the electric power industry. These include, but are not limited to, the electricians, welders, pipefitters, machinists, and power dispatchers who keep the energy grid running safely and reliably. Technicians may work with engineers, lineworkers, and operators on a daily basis, but they are not included in any of those job categories. Information on the number of technicians and their compensation is found in Figure 6.

The Center For Energy Workforce Development: Recruiting and Training the Workforce of the Future

The electric power industry has partnered with community colleges, organized labor, and government agencies to create a range of workforce development and outreach programs that offer opportunities for individuals within local communities to gain the skills, training, and knowledge they need to pursue successful careers in the electric power industry.²⁷

In March 2006, industry stakeholders recognized the need to develop a coordinated approach to recruiting and training the energy industry workforce and launched CEWD. CEWD is a non-profit consortium of electric, natural gas, and nuclear energy companies and their associations (the Edison Electric Institute, American Public Power Association, National Rural Electric Cooperative Association, American Gas Association, and Nuclear Energy Institute).

Figure 4. Electric Power Industry Lineworker Jobs and Median Hourly Wages

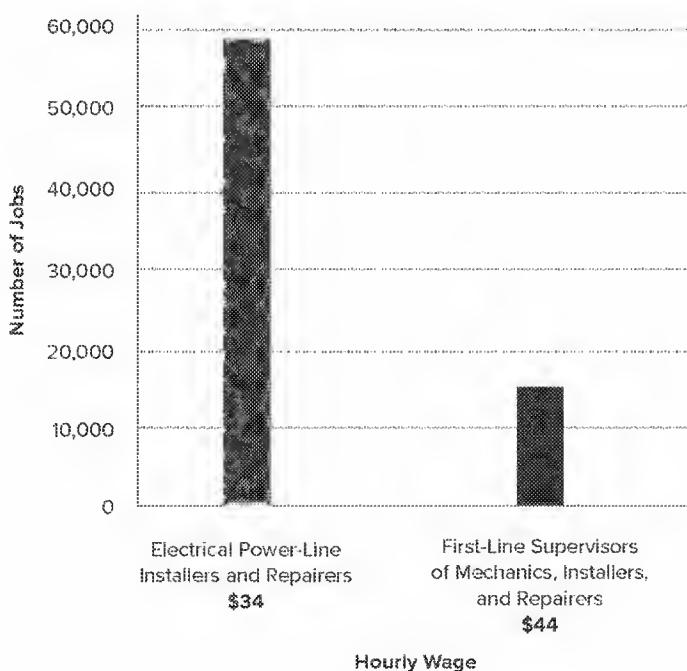
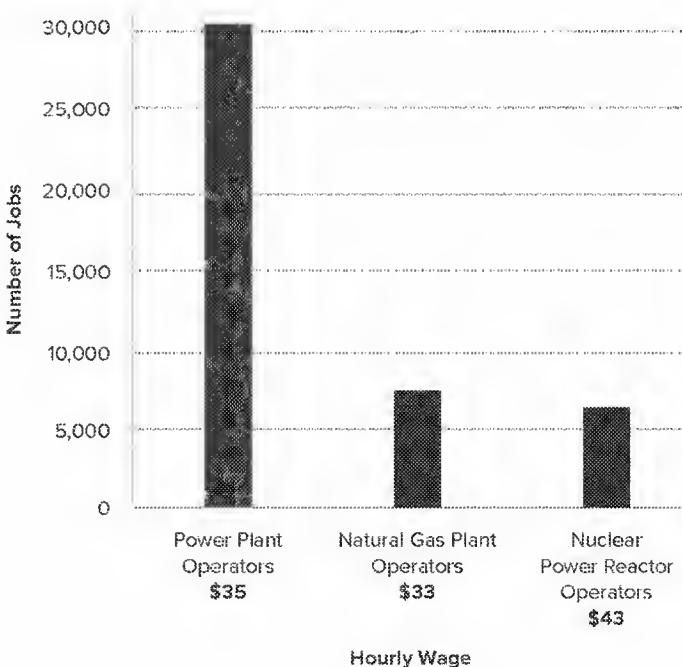
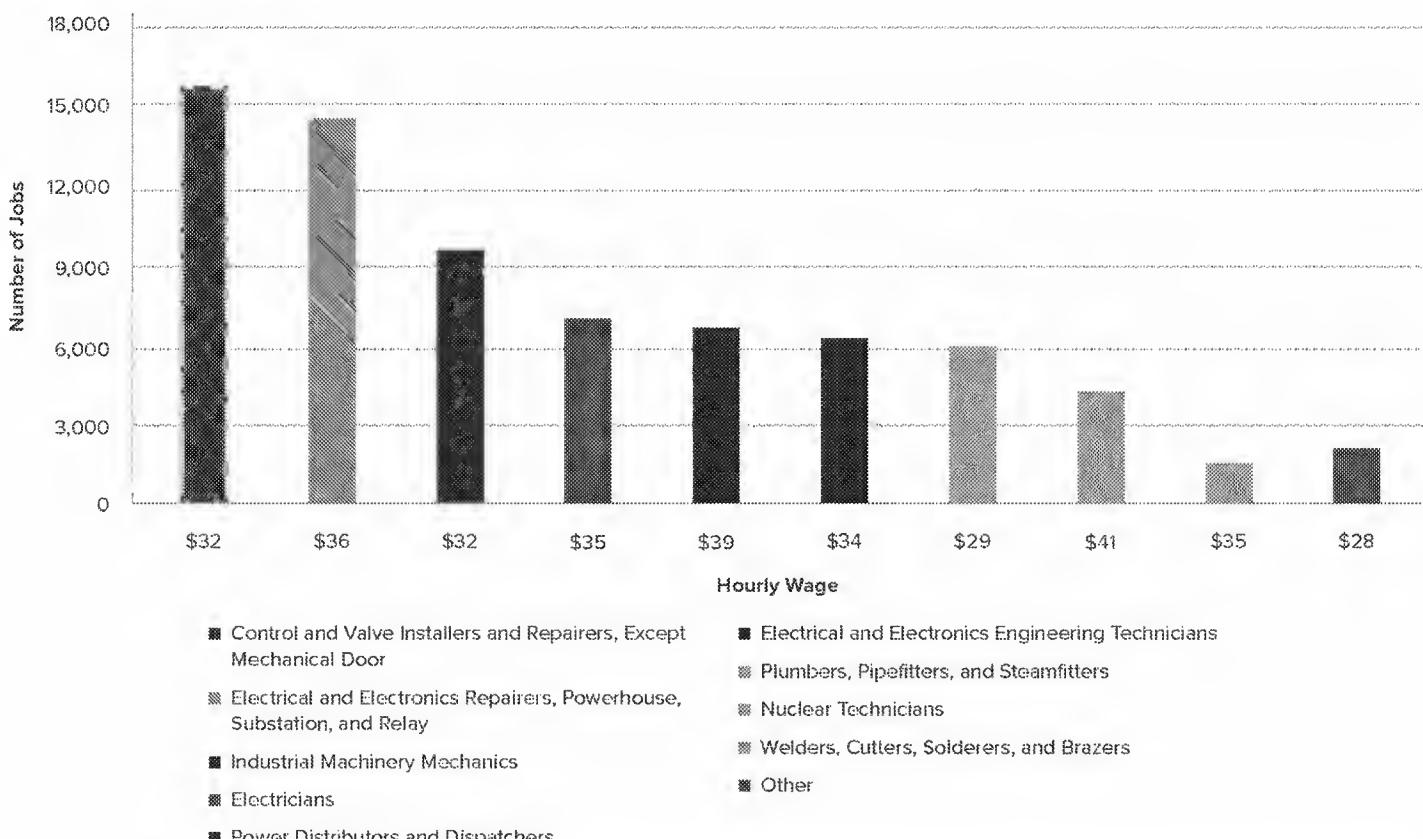


Figure 5. Electric Power Industry Power Plant and Field Operator Jobs and Median Hourly Wages



²⁷ Center for Energy Workforce Development, Gaps in the Energy Workforce Pipeline: 2015 CEWD Survey Results, November 2015.

Figure 6. Electric Sector Technician Jobs and Median Hourly Wages



*Other technician categories include pipelayers, machinists, and millwrights. The hourly wage displayed for the "Other" category is a weighted average of the category medians.

CEWD initially was created to help energy companies develop solutions to issues around an aging workforce and a potential skills shortage in the industry. It was the first partnership among companies, their associations, contractors, and labor unions to focus on the need to build a skilled workforce pipeline that will meet future industry needs.

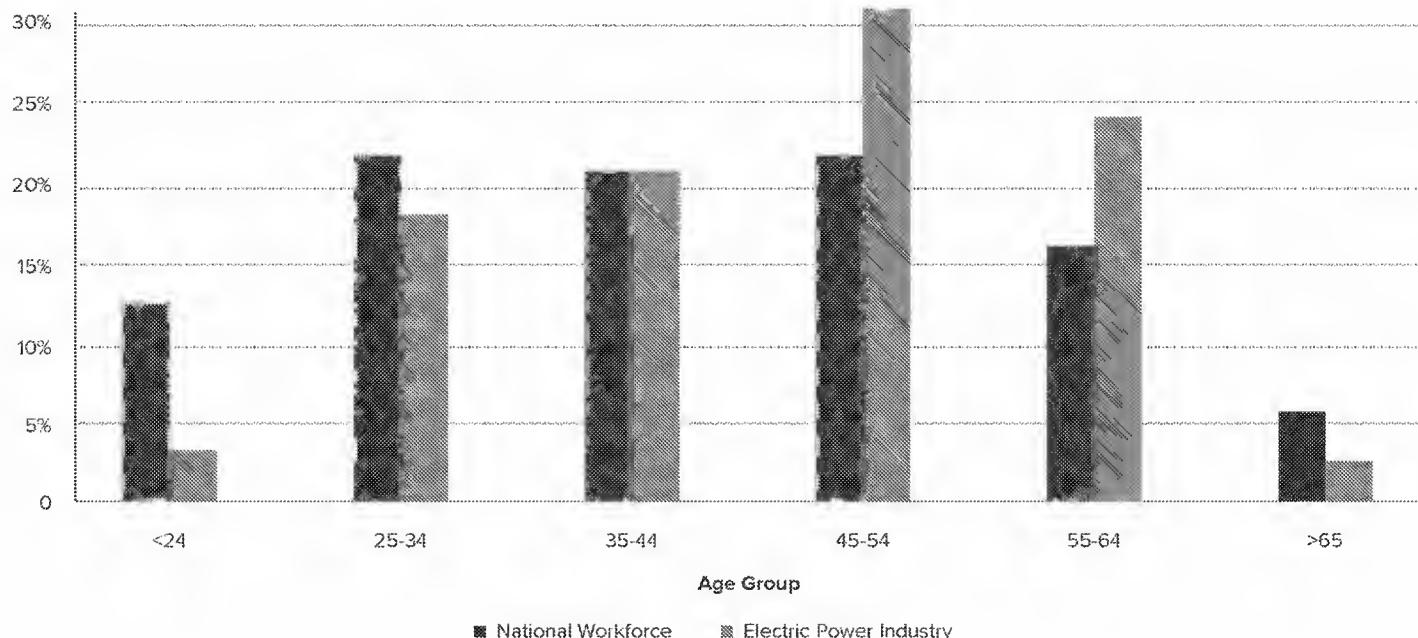
As shown in Figure 7, the electric power industry workforce continues to have a greater percentage of older workers than the total national workforce, with employees older than 45 representing 58 percent of the electric power industry workforce compared to 45 percent nationally. However, based on its surveys, CEWD has found that the energy workforce is becoming younger. In its 2015 survey of the industry, CEWD found that the number of older workers in the key jobs tracked by CEWD has declined. Between 2012 and 2014, the number of employees with the potential to retire in the next one to 10 years declined by 7.4 percentage points, with retirement

forecasts trending downward for the first time since CEWD started surveying the industry.

As the industry has implemented solutions to address concerns about an aging workforce, CEWD has extended its focus to develop approaches to close the skills gap in mission-critical jobs. No other industry has an organization like CEWD, where companies openly collaborate and share processes, technology, and results to build a trained and competitive workforce.

Since its inception, CEWD has built partnerships with multiple federal agencies and national organizations to advance energy education, career awareness, and support for critical energy jobs. A prime example is the Utility Industry Workforce Initiative that partners four federal government agencies (the Departments of Defense, Energy, Labor, and Veterans Affairs) along with organized labor and the national associations that

Figure 7. Age of the Electric Power Industry Workforce Compared to the National Workforce



are members of CEWD specifically to address workforce issues in the industry, beginning with veterans.

The federal government also has supported the development of programs to train energy industry workers. For example, the Department of Defense SkillBridge initiative provides support for programs that train service members transitioning out of the military. Southern Company's Georgia Power has developed a Transmission Line and Substation Construction Training Program that fits within the SkillBridge initiative, providing information and support, pre-employment tests, interviews, and training at Fort Stewart in eastern Georgia for apprentice lineworker jobs at Georgia Power.

Through the Troops to Energy Jobs program, CEWD and the industry have created a roadmap for veterans to enter energy careers and for companies to support the transition, retention, and professional development of military veterans working in the energy industry. Since 2010, participating energy companies have seen a steady increase in veteran hires. Overall, respondents to CEWD's 2015 survey indicated military hiring had increased from 6 percent of new employees in 2010 to slightly more than 10 percent at the end of 2014.

In total, the industry reports that veterans make up 8.1 percent of the electric power industry employee workforce. The trends in hiring and the industry's focus on military hiring and retention suggest that the number will continue to grow.²⁸

At the state level, CEWD has created State Energy Workforce Consortia that represent 30 states and embody partnerships with state agencies, educational institutions, and energy companies. The consortia work to educate students from elementary schools through universities and to provide energy career opportunities for transitioning adults, women, and low-income young adults. For example, the Virginia Energy Workforce Consortium has collaborated with the Virginia, Maryland & Delaware Association of Electric Cooperatives and Southside Virginia Community College to develop a lineworker training program. The program was developed after gathering information on workforce demand in Virginia and after identifying a need for a program that would prepare workers to assume entry-level positions and provide them with the skills necessary to join the apprenticeship process most companies already had in place. The program, which launched in spring 2016, will provide local companies with an in-state source of trained workers.

²⁸ Center for Energy Workforce Development. Gaps in the Energy Workforce Pipeline: 2015 CEWD Survey Results. November 2015.

In 2010, the Bill and Melinda Gates Foundation awarded CEWD a grant to utilize CEWD's existing state energy workforce consortia structure to implement the Get Into Energy Career Pathways Model supporting the Gates Foundation's goal to double the number of low-income young adults earning a postsecondary degree or certificate that has value in the marketplace. The Pathways Model provides a roadmap to skilled technician positions in the energy industry with pathways to higher-level jobs in a variety of work settings.

Building on the success of the Pathways Model, an educational services firm called TCI Solutions developed an approach to developing a local and diverse workforce called the Legacy¹ Model. In 2010, Xcel Energy launched a Legacy program in Minnesota. The program targeted diverse students at high schools in Minneapolis and St. Paul to encourage them to pursue positions at Xcel. Xcel's program builds on a pilot launched by Arizona Public Service in 2010 as part of the company's commitment to build a diverse talent pipeline.

CEWD has established partnerships with the International Brotherhood of Electrical Workers (IBEW) and the Utility Workers Union of America (UWUA) to advance constructive policies and to build labor-management collaborations. In addition, the IBEW has developed partnerships with several companies to develop regional training centers that will provide training to prospective workers and will update training for existing employees. The training facilities, located throughout the country, feature both classrooms and outdoor training areas that can be used to simulate work environments.²⁹

To better reflect the diversity of the communities in which it operates, the electric power industry is working with CEWD and with other organizations to increase the representation of women in the workforce, with an emphasis on introducing women to opportunities for careers in the skilled trades. At the same time, companies, government agencies, and energy industry organizations have launched programs that provide job training for underserved communities. Such

initiatives focus on building interest in the industry and providing individuals with skills that will help them to establish successful energy careers. These opportunities also may extend to the supply chain of the industry through a range of business diversity initiatives.

Conclusion

Electricity is the backbone of our economy and is crucial to our national security. Electricity powers our homes, offices, and industries; enables communications, entertainment, and medical services; runs various forms of transportation; and keeps us all connected 24/7. Today, our high-tech society demands electricity to power or charge nearly every new product or technology that comes to market.

As demonstrated through this study, the electric power industry's economic reach spreads throughout the entire American value chain. In total, the electric power industry supports more than 7 million American jobs—one out of every 20 U.S. jobs.

In addition to providing the foundation for all economic activity, the electric power industry also contributes about 5 percent of total U.S. GDP to the overall economy. And, it is the most capital-intensive industry in the United States, investing more than \$100 billion each year, on average, over and above basic operations and maintenance spending.

The value of electricity and of the electric power industry cannot be overstated. A strong workforce is essential to providing the safe, reliable, affordable, and increasingly clean energy we so often take for granted. The men and women who work in the industry are important leaders and contributors in their communities in every corner of the country.

This report is designed to help policymakers, customers, and other businesses understand the importance and complexity of this vital American success story. And, as we look to the future, we are excited about the changes the electric power industry is leading. We are confident that the resources the industry is investing to expand its training pipeline and to recruit the next generation of workers will enable the industry to continue to deliver America's energy future.

²⁹ For additional information, see: <http://www.nuitf.net/>.

Appendix: Overview of the Data Collected and Modeling Completed in Support of the Electric Power Industry Jobs Report

Economic Modeling Specialists International (Emsi) used its proprietary Multi-Regional Social Accounting Matrix (or the Emsi model) to estimate the total economic contributions of the electric power industry to the U.S. economy. The Emsi model represents the flow of money in an economy, expanding upon a more traditional input-output (I-O) approach to economic modeling. The model performs the same tasks as a traditional I-O tool, but provides a more complete picture of the economy. In addition to reporting jobs, earnings, and sales multipliers, the Emsi model provides details on the demographic and occupational components of jobs (16 detailed demographics and their spending, and about 750 career categories). The model includes more than 1,000 industry, government, household, and investment sectors.

Following is a high-level list of the sectors represented by the national matrix and the relationships among them:

- **Industry Accounts:** The activity of domestic industries
- **Owner-Occupied Dwellings:** Expenditures by people who own and occupy their own residences
- **Labor Accounts:** The earnings and expenditures of workers in certain careers
- **Capital Account:** Capital income creation and allocation of that income to resident demographic profits
- **Government Capital Account:** The depreciation of government capital and the expenditure of funds for capital replacement and maintenance
- **Tax Accounts:** Purchases of government services from taxes on production and imports
- **Investment Accounts:** Captures the source and spending of funds for current investments in the region
- **Trade Balance Account:** The account added to the matrix to handle the international trade imbalance or difference between imports and exports
- **Subsidies Account:** Moneys paid to industries from the government
- **External Account:** The exports of all sectors from the region

Focus of Electric Power Industry Modeling Effort

Any review of the workforce and economic contributions of the electric power industry starts with individuals who are employed by the industry to operate power plants, manage customer relations, maintain the transmission and distribution systems, and carry out countless other tasks and functions that keep the energy grid running safely and reliably around the clock. In this report, we refer to these jobs as electric power industry employee jobs. Electric power industry employee jobs across the economic sectors that make up the electric power industry were provided by Emsi based on its I-O Model and publicly available information.

With input from the Edison Electric Institute (EEI), American Public Power Association (APPA), and National Rural Electric Cooperative Association (NRECA), Emsi and MJB&A identified 10 industries related to the electric power industry by industrial classification code in the North American Industry Classification System (NAICS) for study. Table 1 lists the identified industries by NAICS code and provides a brief description.³⁰

For each NAICS code, Emsi compiled jobs and earnings data using information collected and published by the U.S. Bureau of Labor Statistics (BLS), and electric sector sales information using data from the U.S. Bureau of Economic Analysis' (BEA's) *Make and Use Tables and National Income and Product Accounts*. Using its model, Emsi developed statistics on employment, earnings, output (or sales), and value added (i.e., gross regional product, by industry) by industry sector. This includes the jobs associated with the supply chain, as well as jobs that are induced by the sector, such as hospitals or restaurants in communities where individuals are employed by the electric power industry.

Electric power industry workers in the United States are employed by investor-owned electric companies, public power utilities, electric cooperatives, and independent power producers. The core dataset developed by Emsi focused on employees of investor-owned electric companies and electric cooperatives.

For the purposes of this report, Emsi took additional steps to estimate the workforce associated with public power utilities, which include 2,000 government- and community-

³⁰ Many U.S. electric distribution companies are part of larger corporations that own natural gas local distribution companies. This report only considers the economic impact of electric power industry jobs (NAICS codes beginning with 221).

owned utilities. Within the databases used by Emsi to develop the initial jobs estimates, these utilities are classified as government-related jobs. As a result, Emsi developed a methodology for estimating and reporting public power jobs using ownership data extracted from BLS Quarterly Census of Employment and Wages (QCEW).

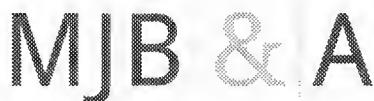
To develop an estimate of the job impacts of the electric power industry's long-term capital investments, Emsi and MJB&A worked with EEI, APPA, and NRECA to estimate annual capital expenditures. EEI estimated capital expenditures (excluding investments associated with natural gas companies) by investor-owned electric companies were \$84 billion in 2014, \$91 billion in 2015, and \$96 billion in 2016. APPA estimated capital expenditures of \$20 billion to \$25 billion annually based on an analysis of sales and generation. NRECA

estimated capital expenditures averaged \$13 billion between 2010 and 2014. Based on recent trends, EEI estimated an additional \$1.5 billion in annual capital expenditures by independent power producers.

Using this information, Emsi estimated electric power industry capital expenditures of \$120 billion in 2014. To estimate the jobs associated with this expenditure, Emsi conducted an independent run of its model with the capital expenditures recorded as additional sales within the model. Based on this independent run, Emsi was able to isolate the impact of the capital expenditures. Within the model, that impact was captured previously as part of induced jobs. Emsi's methodology did not change the total number of jobs within the core run of the model but provided data to attribute jobs to capital expenditures.

Table 1. Electric Power Industry Sectors Included in Analysis

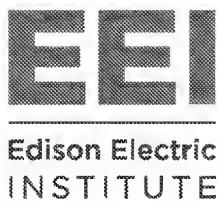
NAICS	Name	Description
221111	Hydroelectric Power Generation	These facilities use water power to drive a turbine and produce electric energy. The electric energy produced is provided to electric power transmission systems or to electric power distribution systems.
221112	Fossil Fuel Electric Power Generation	These facilities use fossil fuels, such as coal, oil, or natural gas, in internal combustion or combustion turbine conventional steam process to produce electric energy. The electric energy produced is provided to electric power transmission systems or to electric power distribution systems.
221113	Nuclear Electric Power Generation	These facilities use nuclear power to produce electric energy. The electric energy produced is provided to electric power transmission systems or to electric power distribution systems.
221114	Solar Electric Power Generation	These facilities use energy from the sun to produce electric energy. The electric energy produced is provided to electric power transmission systems or to electric power distribution systems.
221115	Wind Electric Power Generation	These facilities use wind power to drive a turbine and produce electric energy. The electric energy produced is provided to electric power transmission systems or to electric power distribution systems.
221116	Geothermal Electric Power Generation	These facilities use heat derived from the Earth to produce electric energy. The electric energy produced is provided to electric power transmission systems or to electric power distribution systems.
221117	Biomass Electric Power Generation	These facilities use biomass (e.g., wood, waste, alcohol fuels) to produce electric energy. The electric energy produced is provided to electric power transmission systems or to electric power distribution systems.
221118	Other Electric Power Generation	These facilities convert other forms of energy, such as tidal power, into electric energy. The electric energy produced is provided to electric power transmission systems or to electric power distribution systems.
221121	Electric Bulk Power Transmission and Control	This comprises the operation of electric power transmission systems and/or controlling (i.e., regulating voltage) the transmission of electricity from the generating source to distribution centers or other electric utilities. The transmission system includes lines and transformer stations.
221122	Electric Power Distribution	This comprises electric power establishments primarily engaged in either (1) operating electric power distribution systems (i.e., consisting of lines, poles, meters, and wiring) or (2) operating as electric power brokers or agents that arrange the sale of electricity via power distribution systems operated by others.



M.J. Bradley & Associates, LLC

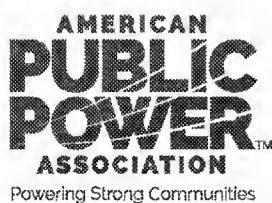
About M.J. Bradley & Associates

M.J. Bradley & Associates, LLC (MJB&A), founded in 1994, is a strategic consulting firm focused on energy and environmental issues. The firm includes a multi-disciplinary team of experts with backgrounds in economics, law, engineering, and policy. The company works with private companies, public agencies, and non-profit organizations to understand and evaluate environmental regulations and policy, facilitate multi-stakeholder initiatives, shape business strategies, and deploy clean energy technologies.



About The Edison Electric Institute

EEI is the association that represents all U.S. investor-owned electric companies. EEI's members provide electricity for 220 million Americans, and operate in all 50 states and the District of Columbia. In addition to its U.S. members, EEI has more than 60 international electric companies as International Members, and hundreds of industry suppliers and related organizations as Associate Members.



Powering Strong Communities

About The American Public Power Association

The American Public Power Association is the voice of not-for-profit, community-owned utilities that power 2,000 towns and cities nationwide. It represents public power before the federal government to protect the interests of the more than 49 million people that public power utilities serve, and the 93,000 people they employ. The association advocates and advises on electricity policy, technology, trends, training, and operations. Its members strengthen their communities by providing superior service, engaging citizens, and instilling pride in community-owned power.



About The National Rural Electric Cooperative Association

The National Rural Electric Cooperative Association is the national service organization representing the nation's more than 900 private, not-for-profit, consumer-owned electric cooperatives, which serve 42 million people in 47 states.

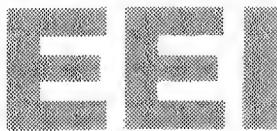
Message

From: Kuhn, Thomas [TKuhn@eei.org]
Sent: 2/22/2017 9:49:39 PM
To: Pruitt, Scott [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=757bedfd70ca4219b6d8046f5ce5681e-Pruitt, Sco]
Subject: Speaking Invitation
Attachments: S43217022216130.pdf

Please see attached letter of invitation for the EEI Board meeting next month.

Tom Kuhn
President
Edison Electric Institute
202-508-5555
tkuhn@eei.org





**Edison Electric
INSTITUTE**

Thomas R. Kuhn
President

February 22, 2017

The Honorable Scott Pruitt
Administrator U.S. Environmental Protection Agency
Washington, D.C. 20460

Dear Administrator Pruitt:

On behalf of the Board of Directors of the Edison Electric Institute (EEI), I would like to invite you to address our spring Board meeting on the morning of Tuesday, March 14, or the morning of Wednesday, March 15, at the Mandarin Oriental Hotel in Washington, D.C. We anticipate approximately 250 senior electric company executives will attend, including roughly 50-55 CEOs from our industry. As you know, EEI is the Washington-based trade association that represents all the nation's investor-owned electric companies.

Coming at the dawn of the new Administration, EEI's member company executives would be very keen to hear your views on a number of critical environmental policy issues that impact our industry, our customers and the nation at large. These certainly include the Clean Power Plan, Waters of the U.S., coal ash and regional haze regulation, along with your views regarding the general issue of permitting and siting of critical energy infrastructure. Of course, we also would be eager to hear your overarching vision for U.S. energy and environmental policy.

For your part, this would be an excellent opportunity to interact directly with our industry's top leaders at a critical time in our history. We would anticipate remarks of perhaps 20-25 minutes, followed by a dialogue with the members of EEI's Board. We will work to accommodate your schedule. As a general rule, our Board of Directors meetings are closed to the news media.

Please feel free to contact me if you have any questions, and we certainly hope that you can join us.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Kuhn".

Tom Kuhn

202-508-5555 | tkuhn@eei.org

701 Pennsylvania Avenue, NW | Washington, DC 20004-2696 | www.eei.org

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